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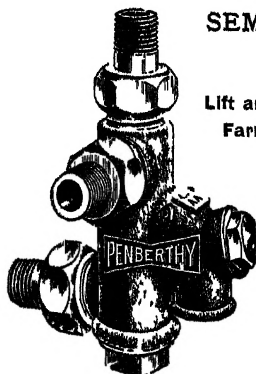
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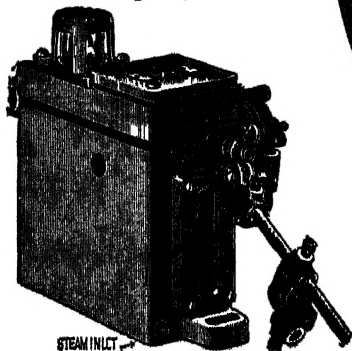
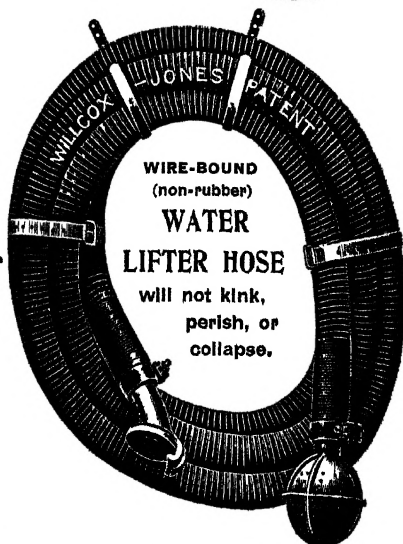
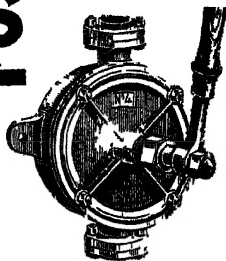
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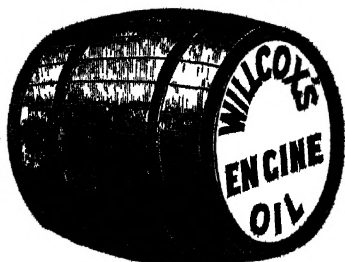


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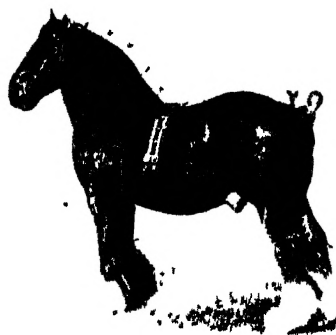


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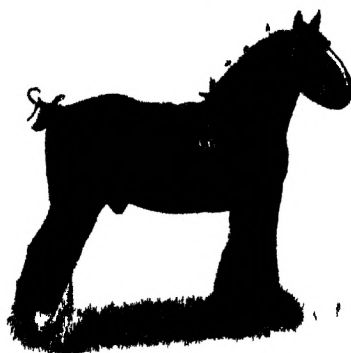


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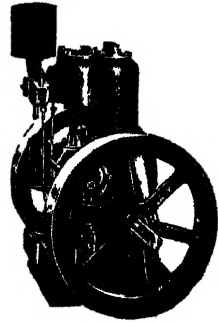


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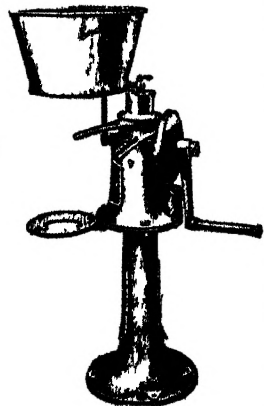
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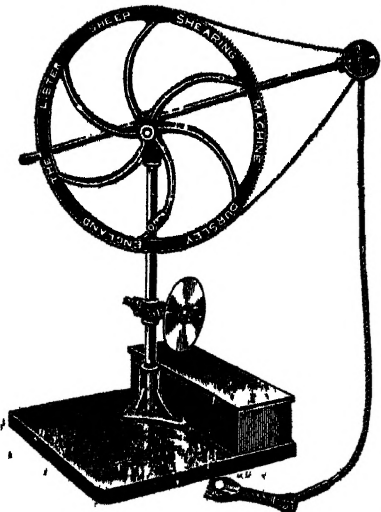
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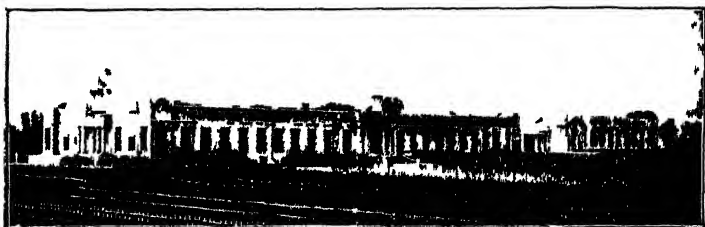
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THE EFFECT OF CLIMATE AND WEATHER ON THE SOIL.

THE dominating influence of weather on agriculture asserts itself not only on the growth of crops ; it has at least as great an effect on the soil. It is the purpose of the present paper to discuss some of these soil effects and to see how they arise and to what extent they are of importance in the economy of the farm. We shall find that the interest of the subject is not confined alone to the thoughtful and observant farmer who likes to think out the reasons for the things he sees ; it appeals also to the man whose chief care is for practical information, because it already affords some help, and seems likely in the future to afford much more, in deciding the best methods of soil management. Climate and weather apparently lie beyond human control, but soil does not ; there are reasonable hopes that the farmer can step in to modify in some directions the effect of the climate and the weather on the soil.

The soil as we find it to-day represents the result of at least two sets of changes : a breaking up and decomposition of rock material, which gives rise to the mineral framework of the soil ; and a slow accumulation of organic matter in consequence of a long succession of generations of plants and animals that have lived and died in the soil and, in dying, have left their remains to mingle with it. Both sets of changes are very profoundly affected by the climate in ways which must be discussed in some detail.

THE EFFECT OF CLIMATE ON THE FORMATION OF THE MINERAL FRAMEWORK OF THE SOIL.

It would be impossible within the limits of this paper to trace out in detail the processes by which the mineral portion of the soil has come into being ; indeed much of the history is

unknown and has yet to be written. But the main outlines have been discovered. The crust that formed when the earth first cooled sufficiently to have one, and the masses of molten material since extruded, soon began to break down under the action of the air, water, heat and cold. The particles chipped off did not necessarily remain where they were, but often got carried away by wind, water, or ice to remote places, and became further ground up or decomposed during the journey. Great quantities were washed out to sea and gradually deposited to form thick masses which ultimately consolidated; when the sea-floor was uplifted to form dry land, these deposits appeared as new rocks and once again the breaking down and carrying away of the particles began. In some cases the newly formed particles remained where they were, elsewhere they were carried away to the sea, once more to go through the process of conversion into rock and subsequent re-conversion into new particles of a new soil. This process has not ended; these changes are still going on, and every muddy stream carries away some of the particles of our soil to contribute to the formation of a new soil in untold years to come.

There is no need to point out that these processes are profoundly affected by the climate; indeed the very name "weathering," used to denote the breaking down of rock material under the influence of rain, air, and temperature, emphasises the vital part played by weather conditions.

It is obvious, moreover, that the breaking down of one and the same rock may proceed in widely different fashion in places where the climatic conditions are very different, and in point of fact these differences have been observed. There are difficulties in the way of investigating this point thoroughly because it is not easy to find areas where the original rock is uniform and the climatic variations sharp. But cases have been observed where the differences in soil of two regions are greater than could be expected from the rocks alone, and these differences are therefore attributed to climate. In climatic conditions such as obtain in this country the rocks break up to yield enormous quantities of silica, the chief constituent of sand, and of various complex silicates, containing combinations of iron and aluminium, which occur largely in clay. The iron and aluminium compounds form only relatively small proportions of our soils. But in parts of the tropics, where the disintegration processes have gone on under wholly different conditions, the rocks have broken down to yield soils containing only small amounts of silica and relatively large quantities of aluminium and iron oxides. These soils differ entirely from ours and have received a special name—laterite soils. In sub-tropical regions another type of disintegration has gone on,

giving rise to considerable areas of a distinct type of red soil, in which again there is only relatively little silica. The study of these changes is very incomplete, and it is not supposed that the original rocks were identical in all cases. But it is very significant that under these three sets of climatic conditions three distinct varieties of soil have arisen: in the temperate regions soils were formed characterised by great amounts of silica; in tropical regions considerable areas of laterite soils have arisen characterised by the presence of much alumina and little silica; while in sub-tropical regions there have been formed quantities of a third kind of soil which differs altogether from the other two.

This is not the place to describe the laterite or the red soils; it is sufficient to note that they are altogether different in character and require wholly different treatment from ours. The important point for our present purpose is that the soils to which we are accustomed and on which we have grown up owe part of their character to our past and present climate, for it was the climate that determined in part the way in which the rock broke down into the mineral particles of the soil.

There is a second direction in which climate regulates the composition of the soil. As we have already seen, the particles formed from the rocks do not remain where they are formed but get carried away by various climatic agencies. Sometimes running water has been the transporting agent, sometimes ice, sometimes wind. Usually there was some selection and the particles got sorted out to some extent on the journey; also they suffered change. Even where the sorting out processes did no more than grade the particles according to their size the effect was still very far-reaching. Many of the important agricultural properties of the soil are regulated by the size of the particles: large particles tend to make the soil light and easily worked, porous, non-retentive and early; small particles tend to make it heavy, sticky, and late, retentive both of water and manure. Perhaps the best illustration of selection by the transportation medium is afforded by the famous loess soils of central and eastern Europe, the Mississippi valley and elsewhere. In this case wind was the transporting agent, but as the carrying capacity of wind is limited these soils are characterised by the relatively small variation in the size of their particles. In the northern parts of the Mississippi region large glaciers had brought down a great amount of drift. Some of this was carried for many miles by the wind and deposited to form new soils. The original drift material is very mixed containing particles ranging in size from large stones down to the finest clay. The loess soils, on the other hand, are much less mixed; as found in Nebraska they are

deep, uniform in texture, and free from stones : they are easily worked and very fertile where the water supply is good.

The loess soils represent the simplest case because they are formed by the sorting action of the wind, there has not been much change in transit. Other modes of carriage involve greater change : thus ice in some cases has ground the particles down considerably and the final result of the glacier action and subsequent changes has been to produce a great deal of boulder clay of no very high agricultural repute.

Thus we see that the mineral part of the soil is very considerably affected by the climatic conditions that have obtained since the original rock began to split up. The effect has been produced in two directions : in determining the way in which the particles have broken down, and in determining the extent to which they have been removed or sorted out since. In both ways the character of the soil is altered. Sometimes the climate has changed, but it always leaves its mark. Over the part of Great Britain which is covered with glacial drift the character of the subsoil is determined by a climate that has long since vanished, while the surface soil has been modified by the climate we now enjoy.

We must now turn to a third highly important effect of climate on soil, viz., its effect on the organic matter of the soil.

THE INFLUENCE OF CLIMATE ON THE ORGANIC MATTER OF THE SOIL.

The mass of mineral particles formed by the weathering of the rocks and the sorting out by subsequent agencies is not yet soil, although it may be looked upon as the framework of the soil. But it soon covers itself with vegetation which gradually has a most profound effect and converts the mineral mass into a true soil. As this vegetation dies its residues mingle with the mineral particles, being carried in by earthworms and various insects. During its lifetime the plant has been making a good deal of the substance of its leaves and stems from the gases of the air and the rain water, and the materials thus formed contain stored up energy derived from the sunlight. When they mingle with the soil and begin to decay the energy is liberated in the form of heat, and by the time they are completely decayed they have given out just as much heat as if they had been burned in a bonfire. The original heap of mineral matter contained no easily available stores of energy ; the mixture of mineral matter and plant residues on the other hand does. The consequence of this addition is very profound ; life is now possible in the soil, and there springs up a vast population of living creatures all drawing on this accumulated store of energy, flourishing so long as it holds out

and dying off when it is exhausted. It is this that constitutes the vital distinction between a heap of mineral matter and a soil. There is no soil without life and no life is possible without stored up energy. We are only beginning to know what this soil life is, but already some hundreds of different kinds of creature have been found. Some few are large enough to be seen. Of these the most important are the earth-worms, which burrow in the soil and effect a fine natural cultivation, letting in air and drawing in leaves, stems, and other vegetable débris from the surface to mingle with the mass of soil below. Most of the soil organisms are microscopic in size; some are leading an active life, others are in the inert resting stage and are called spores or cysts. The very incomplete census taken so far shows that the numbers of micro-organisms living in a single salt-spoon full of soil must be reckoned in millions.

The second effect of this addition of organic matter is also great; the decay of the vegetation profoundly influences the amount of plant food in the soil. The first vegetation that sprang up must obviously have got its food—its calcium and potassium salts, phosphates, &c.—from the mineral particles, but new sources of food appear for the plants that come after. The first crop slowly decayed under the influence of the soil organisms and in decaying it set free those substances that its roots had taken as food and returned them again to the soil. Hence subsequent plants have food from two sources: the potassium salts, &c., dissolved by the soil water from the soil particles; and in addition a supply of the same substances drawn by previous generations from the soil during their lifetime, but afterwards set free on the decay of the dead tissues. The plant food, in fact, keeps circulating between the soil and the plant, and the organic matter constitutes the medium by which the circulation takes place.

In our climate, and in humid climates generally, the decay of the plant residues is not complete, at any rate during the course of a few seasons, and some of the products accumulate as dark brown or black substances conveniently known by one name, humus. These substances have certain physical properties which they impart to the soil, and they enable the cultivator to get a really good tilth.

The character of the soil is therefore very much affected by the nature of the organic matter present, and this is largely determined by the type of vegetation that grows there and the extent to which the decomposition has proceeded in the soil. Now both these are climatic effects. Under dry conditions the plants tend to be narrow leaved and tough—pine needles, broom, &c., will at once occur as instances—whilst under

moister conditions a more leafy type of vegetation arises. These two types of vegetation break down in very different manner in the soil : the large leafy plants yield a considerable supply of useful humus material, while the shrubbier and more leathery plants of the dry situation do not. There may be plenty of organic matter in these dry soils ; the light dry sands of the Sussex heaths sometimes contain as much as 10 per cent., but it exists in the form of undecomposed bracken fronds and similar residues, and is of no agricultural value because it is not properly decomposed. Hilgard in California long ago drew attention to the great difference between the humus material in soils of dry and humid regions, and this difference arises from the fact that in humid regions the conditions are favourable for the growth of the best kind of plant to make humus material and also for the carrying on of the best type of decomposition process.

SOIL LOSSES.

So far we have been considering only the building up of the soil ; we have now to turn to the other side of the account and study the losses that are going on. The processes that called the soil into being are still operative to-day, and the transport of material did not come to an end when the soil was brought into its present position but continues, and tends to remove the soil now that it is formed. The losses have gone on simultaneously with the formation of the soil and they still continue. The most important source is the rain. As rain falls on to the land and soaks in it dissolves out some substances and carries them away. Hence the drainage waters are always hard and often unfit for drinking. The constituent that is removed in largest quantity is calcium carbonate, and no less than 8 to 10 cwt. per acre of this are washed away each year at Rothamsted. The importance of this becomes evident when it is realised that calcium carbonate is a most potent agent in enabling a good tilth to be got and in preventing the soil from becoming sour. Other soluble constituents are also removed in proportions which are certainly less but which become considerable when the action is continued year after year. Thus in course of time a soil exposed to a heavy rainfall tends to become reduced to hard insoluble residues of unchanged mineral fragments ; finally it may become barren through loss of plant food, and "sour" through absence of calcium carbonate. On the other hand, a soil in a dry region of low rainfall keeps all its soluble constituents intact, indeed it may become so heavily charged with them as to become barren through this very excess. Again, heavy rainfall may wash the soil bodily away and leave only the bare rock or a wholly impossible



PHOTOGRAPH

FIG. 1.—A donga in Nital, showing erosion caused by heavy rainfall

subsoil. This sometimes happens in our own country in hilly regions, and is not infrequent in lands of violent storms, especially where man has come in and removed the native vegetation that once afforded some measure of protection: thus arises the dongas of South Africa and some of the eroded lands of Australia. Fig. 1 is a photograph of a donga in Natal for which I am indebted to Dr. F. A. Hatch. Wherever some break in the surface of the veld allows the rain to start a little water course, the washing away goes on along that line. The break may be a natural depression, or it may result from clearing the veld for cultivation, or even from keeping cattle always to one track in passing to and from their drinking places. Torrenrial rains soon remove the soil and lead to the remarkable erosion shown in the illustration.

SOIL BELTS AND CLIMATIC ZONES.

We have seen that right from the very commencement of its history the soil has been moulded by the climate, and it is not surprising, therefore, that parts of the earth with characteristic climates should also have correspondingly definite soils. Wherever there is a well-marked climatic zone we may look for a well marked soil type. Of course there are always subdivisions within the climatic zone arising out of the differences in the original rock and based therefore on geological grounds. But in any great classification of soils it is necessary to begin with the climatic zones and divide the soils into great groups according to these zones, then, and not till then, to subdivide the great groups according to the geological origin of the material.

These zones can be recognised in any great continental area. In the great dry belt in the west of North America there is a scarcity of vegetation, consequently but little organic matter finds its way into the soil, and such as does get there possesses very characteristic properties. Further, the absence of rain leads to an accumulation of soluble substances derived from the breaking up of certain mineral particles, and some of these are directly harmful to the plant while others indirectly injure it by depriving it of such little soil moisture as is present—for plants can only take water from weak and not from strong solutions. Soils thus charged with salts are called alkali soils; these occur sometimes in patches (often the result of scepago) and sometimes in great areas, but they are always dreaded alike by cultivators and travellers. For as they dry the wind blows them up into the eyes and mouth and nostrils till the membranes smart again: they carry no broad-leaved vegetation and they yield no drinking water. Patches in cultivated fields are marked by the failure of the plant. The

soil is curiously mottled in appearance; it forms hard white lumps round which black water collects or dries to leave a black crust behind. It is hard on top but often mushy below, especially in irrigated regions, and after you have kicked away the surface layer you come into a thick stodgy clayey mass. Irrigation, drainage, and treatment with gypsum have done much to reclaim these lands.

Moving eastwards and northwards there is a rather moister belt with more grass and less alkali, but the vegetation is still wiry or leathery and gives rise to organic matter characteristic in quality but sparse in amount. These are the steppe soils which can be found in parts of the Western States and of Alberta. Alkali spots still occur, and Fig. 2 shows one taken by Dr. Alway on a farm on the Platte River, Nebraska.

Still further eastwards and northwards is a zone of higher rainfall where the conditions were such that organic matter accumulated to a very marked extent in the soil. Here arose the wonderful black soils on which so much of our wheat is grown, especially developed in Manitoba, Saskatchewan, and Alberta, in Minnesota and other Middle Western States.

Elsewhere, however, the black soil is not seen but the loess, a windcarried soil derived from glacial drift and mingled with calcareous débris but without the large amounts of organic matter of the black soils. These give the deep rich soils found in Eastern Nebraska, Iowa and parts of the Mississippi valley. All these areas are characterised by cold, clear winters and hot dry summers. In the aggregate the rainfall may be high, but its distribution is not always favourable to maximum crop production. These areas are in the main treeless. Coming still further east into the regions of wood and forest where the climatic conditions approximate more closely to our own, the soils also resemble ours in England.

A wholly different type of soil, known as the tundra, is found in the far north in the barren lands beyond the regions of our accustomed vegetation. It is like a peat bog with a permanently frozen subsoil and carries only mosses, lichens, and dwarf caespitose shrubs.

Any other continental area can similarly be divided into zones corresponding broadly with climatic zones. In Russia, for example, white desert soils poor in organic matter but often containing alkali are to be found in the dry Caucasian region; further north under a limited rainfall of 8-12 inches occur the brown steppe soils, their deeper colour indicating their higher content of organic matter; pushing still further north a belt of chestnut coloured soils is found stretching away in a north-easterly direction from Podolia in the south-west across Little Russia to Samaria and Orenburg in the east.



[Photo by Dr. J. W. Mearns]

FIG 2.—Alkali spot in a field on the Platte River Nebraska

Above this again comes the famous belt of black earth, the Tchernozem, the nearest European approach to the black soils of the western prairies, and like them devoted largely to the cultivation of wheat; these are found in Hungary, and continue north-easterly through the West Russian province, Volhynia, to the Government of Perm. Further north these are succeeded by the Podsoles, white, poor, acid soils in a cold wet belt still left in forest; and finally above them come the tundra soils, acid, treeless, carrying only lichens and moss.

Even in England indications of climatic zones can be traced, although in the main our soils would fall into one great group of woodland origin. But in the dry eastern counties some of the heaths are distinctly steppe-like in character, while in the wet high-lying districts of the north occur moorland soils entirely different from the clays, loams and sands of the midlands and the south.

We cannot now go into a detailed description of these various soils; the point of immediate importance is that the very marked and unmistakable differences in the soils are the result of the climatic conditions to which they have been exposed.

THE EFFECT OF WEATHER ON THE SOIL.

Climate, as we have seen, plays a great part in determining the general character of the soil, but every farmer knows that a soil may often deviate a good deal from its general character, and exhibit tolerably wide variations from year to year. The broad character is set by climate, but the variations are the result of season or weather, which may vary considerably within the rather wide and vague limits of climate. These effects are different in character from those we have been studying, and before passing on to them it is necessary to get some general idea of the state of things in an ordinary fertile soil.

The various mineral particles, the calcium carbonate, phosphates, &c., and the organic matter are on the whole well mixed up together to form a porous mass of which about 60-80 per cent. is solid while 20-40 per cent. is pore space. This space, however, is not actually empty but contains a varying amount of water: sometimes it is completely filled, but more usually only about half to two-thirds is so occupied, leaving the remainder filled with air. In a wet season the pores are pretty completely filled with water; in a dry season they are more nearly full of air.

The various changes going on in the soil in consequence of chemical and bacterial processes result in the formation of a

certain amount of soluble material, and a good deal more soluble material is added in the form of manure. Some of this, notably the phosphates and potassium salts, gets absorbed by the soil in such a way that it becomes for the time being locked up, and is only slowly given up to plants and still more slowly to the drainage water. Two very striking exceptions occur, however. The calcium carbonate dissolved in the drainage water does not become re-absorbed to any notable extent, but is quickly removed as the drainage water flows away. The nitrates, also, which are among the most potent of all nitrogenous plant foods, are not absorbed but are speedily washed out. Both these substances—calcium carbonate and nitrate—are exceedingly important to the fertility of the soil, and their loss is a serious matter which has to be made good. In the case of calcium carbonate this is readily done by adding lime or chalk, but the process of increasing the nitrate is often more complex.

Often, of course, a nitrate is added to the soil and then the process is as simple as when chalk is added. But it is common to add some other nitrogen compound, such as sulphate of ammonia, or a complex organic material such as farmyard manure, the residue of a clover ley, or some kind of guano. In this case a manufacturing process has to go on in the soil through the agency of the soil bacteria, and not till this is complete does the nitrate appear. The complication arises through the fact that the soil bacteria are themselves affected by the weather, so that the whole manufacturing process may be brought abruptly to an end by an adverse change in this direction. But even this relationship is not entirely direct. There is now evidence that the bacteria producing ammonia and nitrates are not the only organisms living in the soil, but that others are also present, destructive to the useful ones. The amount of action at any time depends on the difference in activity of these opposing groups. Fortunately the detrimental forms are more readily put out of action than the useful bacteria, and a period of adverse conditions is really an advantage to the useful forms and leads to a greater production of plant food. Thus exposure to prolonged frost or drought or to the baking of the sun does not permanently injure the useful bacterial activity in the soil, but on the contrary leads to an increase as soon as the conditions become normal again, because the detrimental organisms suffer the greater check, so that the balance shifts in favour of the useful ones.

Further, the physical condition of the soil is affected very much by the weather. Frost helps to make a tilth, rain tends to destroy it. Neither action is quite understood, but the fact is incontrovertible.

Thus there are at least five ways in which the weather or seasons affect a soil apart from the great climatic effects we have already studied :—

1. High rainfall tends to wash out two very useful constituents, calcium carbonate and nitrates, both of which must be replaced or the soil loses fertility. Fortunately other useful substances are less liable to loss.

2. High rainfall has an adverse physical effect, spoiling the tilth.

3. In dry conditions there is less or no washing out of calcium carbonate or of nitrates, and hence less wastage of fertility.

4. Drought, frost, hot sunshine, and other factors which are detrimental to life are finally beneficial to bacterial activity and lead to an increased production of plant food.

5. Frost has a beneficial effect on tilth.

These factors are of course all mixed up in their action, but the general effects may be summed up briefly.

The nitrates formed during summer by bacterial action, and destined to serve as food for the next generation of plants, are readily washed out during a wet winter, but they remain safely locked up in the soil throughout a period of frost and snow when no leaching takes place. There they lie ready for use when spring awakens the young plant into activity, and in consequence a mild spring following on a hard winter is commonly a period of vigorous growth. This is well seen in Canada, where a remarkable development of vegetation takes place directly the weather is sufficiently warm. In part the result is due to the effectual cold storage of the plant food neither loss nor deterioration going on in frozen ground ; in part to the disintegration of the soil organic matter under the action of frost so that it becomes more easily assailable by soil bacteria, and partly to the improvement already mentioned in the amount of work the plant food makers can do.

Another effect of a wholly different nature is also produced. Frost puffs up or lightens the soil ; it splits the hard clods and brings them down to a nice crumbly tilth well adapted for a seed bed. On the other hand, long continued wetness consolidates the soil, makes it sticky and very unsuitable for seeds. Thus at the end of a mild wet winter the soil is poor in plant food because of the leaching that has gone on, its population of micro-organisms is very mixed because the susceptible harmful ones have not been depressed, and it is in a bad mechanical condition because the wetness has made the clay particles very sticky. On the other hand, at the end of a more severe winter when the land lay frostbound or covered with snow there is a good supply of plant food, all

the autumn reserves having been safely locked up in the soil, the micro-organic population has become more efficient in producing plant food, and the texture of the soil is very favourable for the production of a good seed bed. The advantages, therefore, are wholly in favour of a dry, cold winter, and we can see the wisdom of the old proverbs—

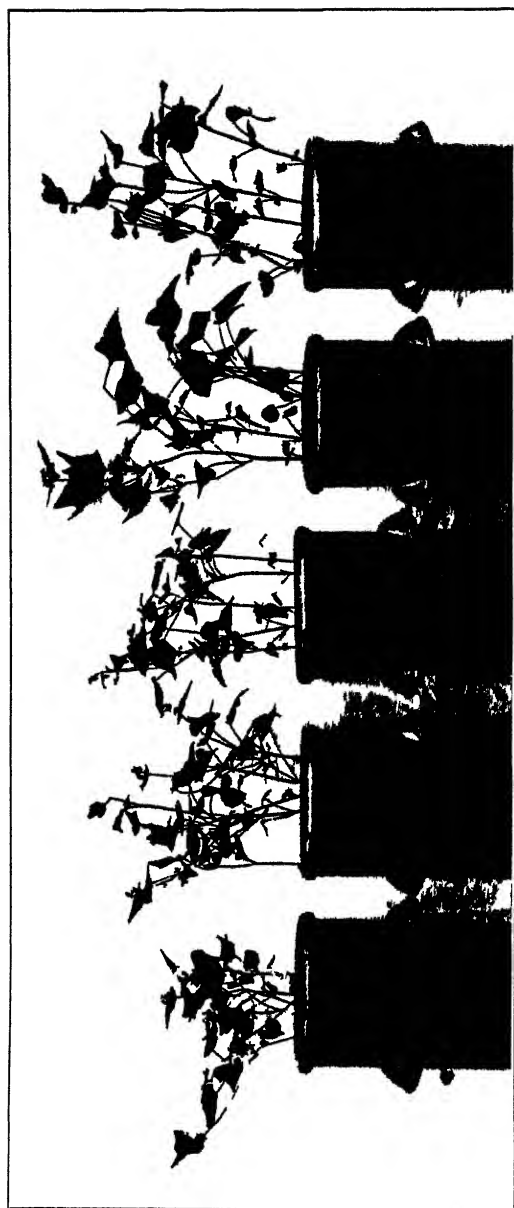
“Under water famine, under snow bread”

“A snow year is a rich year”

and of the more recent calculation by Dr. W. N. Shaw that every inch of rain falling during the autumn months September, October, and November lowers the yield of wheat in the next season by a little over two bushels per acre from his ideal standard of 46 bushels.

The older writers, noticing the value of frost and snow, thought they had an actual fertilising value, and indeed many gardeners and farmers will still contend that snow is a manure. Opinions of good cultivators are always entitled to respectful consideration, and many analyses of snow have been made, but they have failed to reveal any appreciable amount of fertilising constituents. Snow differs a little from frost in its action; it forms a non-conducting coat for the soil and prevents the temperature from falling as low as it otherwise would. How far this affects the soil has not been ascertained, no one yet having found out just what degree of cold is necessary to bring about these useful results, but any plants that happen to be in the soil certainly benefit by the snow cover, because their roots are protected from excessive cold.

A hot dry summer has at least as beneficial an effect on the soil as a cold dry winter. The drying out certainly changes a heavy soil into clods, but when these are moistened again by autumn rains they really fall to a good tilth. If the warmth has been sufficient there is an even more marked improvement in the soil population as far as food making is concerned than after a cold winter, and Mr. and Mrs. Howard have shown that hot weather cultivation in India, which facilitates the exposure of the soil to the hot sun, leads to a considerable increase in productiveness. In the first year of the experiment the increase was six bushels of wheat, in the second year it was 12½ bushels. We obtained a similar result at Rothamsted during the hot dry summer of 1911; some soil was exposed in a thin layer to the sun for ten days, and turned over at frequent intervals so that every part should be baked through and through. It was then transferred to pots and sown with buckwheat; pots of similar soil, which, however, had not been exposed to the sun, were sown at the same time. Other pots were put up of soils artificially dried to 100° F., a



A Untreated soil not exposed to drought
 B Soil dried at 100°F for 24 hours
 C Soil dried at 100°F for 5 days
 D Soil dried in sunshine for 10 days during the hot summer of 1911
 E Untreated soil not exposed to drought

E

D

C

B

A

temperature easily obtained in hot regions. Right from the outset the dried and sun-baked soils gave the best results, and a photograph of the crops taken at the end of the season is shown in Fig. 3.

These are the same kind of results as we get with partially sterilised soils, and it is probable that the same cause is at work in both cases.

However, we do not often get summers like 1911, and crop increases of this size must necessarily be exceptional in this country, although they could more regularly be obtained in hot regions.

The remarkable fact has recently been brought out that the manufacture of nitrates in the soil (which, as we have seen, is an indispensable process for the welfare of the crop) takes place most rapidly in our climate in late spring or early summer. It then slackens down while the plant is growing, but it may speed up again in autumn, especially in such an autumn as 1913. The amount produced in spring is of the most importance, because this is the time of most rapid nitrate production. If for any reason only a small quantity is formed then the amount tends to remain low throughout the year, with consequent loss of fertility. On the other hand, if the amount runs up high the plant has plenty of food to draw upon, although of course it may still fail if the season is bad. Now the quantity of nitrate formed in spring depends partly on the weather at the time, as this regulates the activity of the organisms, partly on the weather of the preceding winter, and also on the wetness of the land. As the soil becomes moist the pores fill with water, so that there is less room for air, and finally when the soil becomes really wet the air supply in the pores is much reduced, and may become too small for active nitrate formation. So much for the effect of spring.

Now for the effect of the summer. In a dry summer the nitrate formed is all left in the soil or taken by the crop; in a wet summer some of it leaches out. These results are well illustrated by a comparison of the nitrates present on one of the Rothamsted plots during the wet summer and autumn of 1912 with the amounts present in the dry summer of 1913. These particular plots are unmanured and have been for long past; both were fallow during the summer. The amount of nitrate present in the top eighteen inches of soil was equivalent to the following quantities of nitrate of soda, in lb. per acre:—

	Feb.	May	Sept.
Dry summer, 1913	126	812	378
Wet summer, 1912	180	188	114
<hr/>			
Difference in favour of dry summer, reckoned as nitrate of soda, lb. per acre		174	264

At the beginning of the spring, in February, the amount of nitrate was less in 1913 than in 1912 because of the very wet winter. By May, however, matters had greatly improved, and already 1913 showed a great advantage over 1912 so that there was now a stock of nitrate 174 lb. larger than in 1912.¹ This advantage was kept throughout the season, and in September, 1913, there had been a still further increase in the stock, so that it now stands at 378 lb., while in 1912 there had been a decrease and it fell to 114 lb., making a difference of 264 lb. in favour of the dry summer.

This is not merely a question of academic interest; it is of supreme practical importance. Reckoning the farmers' year as beginning in October, we see that the summer fallow in the dry season of 1913 left him with as much nitrate in the top 18 inches of soil as is contained in 378 lb. of nitrate of soda, while after the wet season of 1912 he only had 114 lb. Now this nitrate represents some of his working capital, for it was partly to gain nitrate that the fallow was undertaken.

Here is another table showing the nitrate present on other plots at the beginning of October in the two years. In these cases the plots had been cropped during the previous season, but the crops had been removed as early as possible and the land subjected to as near a bastard fallow as we can get in our circumstances. Here again it is seen that after the wet summer of 1912 there was less nitrate left with which to start the new season than after the dry summer of 1913:—

	Broadbalk plots.		Hoos wheat unmanured
	Dunged Plot 2	Unmanured Plot 3	
Nitrate present in top 18 in., Sept. 1913, after dry summer . . .	314	208	198
Nitrate present in top 18 in., Sept. 1912, after wet summer . . .	240	126	96
Difference in favour of dry summer reckoned as nitrate of soda, lb. per acre	74	82	102

The important point I want to emphasise is that the amount of nitrate in a soil at the beginning of the farmers' year in October depends very much on the character of the preceding

¹It has already been pointed out that this spring formation of nitrate does not depend on any one factor but on several, and it is particularly interesting to note that the rainfall during the four months February-May was practically the same in the two years, viz. 8.14 in. in 1912 and 8.49 in. in 1913. This shows that rainfall alone does not decide the matter.

spring and summer. It may be high, if the spring has been favourable and the summer dry, or low if the summer is wet. The difference is not simply a matter of rainfall, but also of the general state of the soil, other factors coming into play which we need not now discuss.

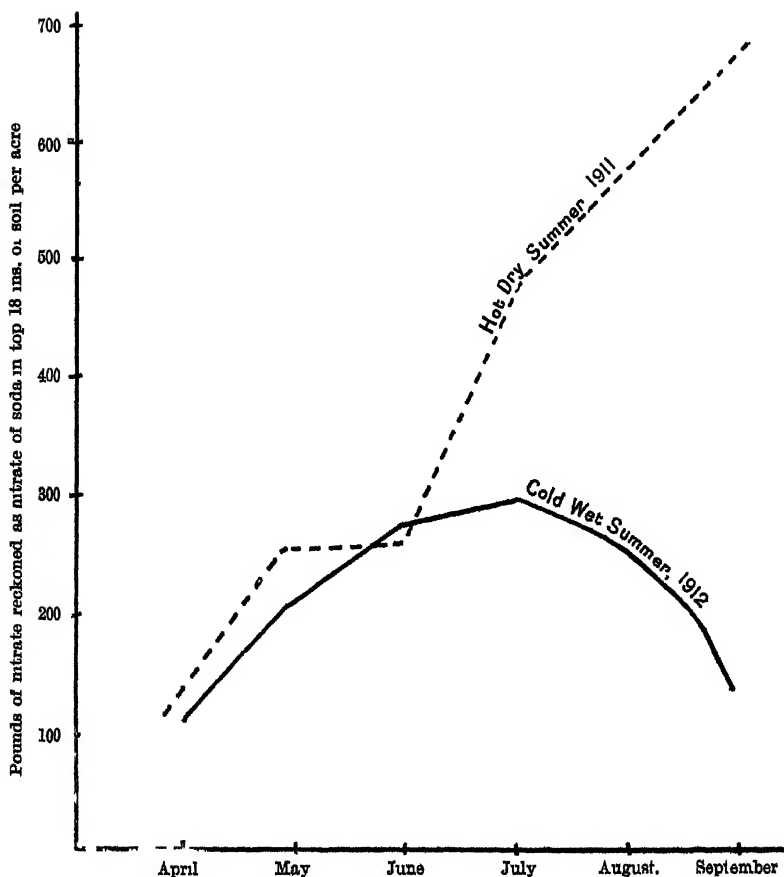


FIG 4.—Curves showing the way in which nitrates accumulate in the soil in a hot dry season, but get washed out in a wet season.

This initial October stock remains safely locked up if the winter is dry, but it may suffer serious loss in a mild wet winter. Here are some results that have been obtained at Rothamsted. The most favourable year in recent times for the summer and autumn accumulation of nitrates was 1911. In September, 1911, a piece of land in good heart that had been

fallowed throughout the summer contained nitrate equivalent to no less than 690 lb. nitrate of soda per acre in the top 18 in. The winter 1911-12 was very wet, and 19.9 in. of rain fell in the five months September 13th—February 15th. By this latter date only 186 lb. nitrate was left, the rest, equivalent to 504 lb. of nitrate of soda, being lost. One heard a good many complaints at the time of the badness of the season, but it may be doubted whether many realised exactly how serious the loss was. Even land in much poorer condition suffered greatly; a poor plot started out in September, 1911, with nitrate equivalent to 306 lb. nitrate of soda per acre, and ended up in February, 1912, with only 168 lb., a loss of 138 lb. This was on a loam. On clays the loss is less because there is less accumulation of nitrate during the summer and less percolation during winter; a stiff clay at Ridgmont began in September with 234 lb. and ended in February with 180 lb., a loss of only 54 lb. The harm done to a clay soil by a wet winter is the injury to its texture rather than to its nitrate content. On sands also the loss of nitrate is less than from loams; a sand at Milbrook started with 102 lb. in September, and ended up with only 54 lb. in February, a loss of 48 lb. In a dry winter much less loss goes on. These relationships are shown in Fig. 4.

THE EFFECT ON THE CROP.

All these actions show up in the crop yields. Of course, other disturbing factors may come in to mask them in a particular season, and the character of the season has a great direct effect on the crop, but taking the yields over a series of years the effects due to the soil are very plainly visible. The damage done by a wet winter is sharply brought out in two sets of the Rothamsted plots.

Two plots on the Broadbalk wheatfield receive the same rather liberal dressing of artificial manures including sulphate of ammonia, superphosphate, sulphate of potash, &c., the only difference between them being that in one case (plot 7) the ammonium salts are applied in spring, while in the other (plot 15) they are applied in the autumn shortly after sowing. In years of low winter rainfall there is on an average practically no difference in yield, the ammonium salts, and the nitrates formed from them, remaining in the soil till the plant has had time to take all it wants. But in years of high winter rainfall the autumn dressings give considerably poorer results than the spring dressings; the nitrate formed does not remain in the soil but washes out so that the plant does not get all it wants. The results are :—

	Rainfall Oct.—March	Yield of grain, bushels per acre		
		Ammonium salts applied		Difference in favour of spring dressing
		In Autumn	In Spring	
¹ Dry winters . . .	11.73	31.8	32.5	0.7
¹ Wet „ . . .	16.73	27.5	32.5	5.0
Total produce (grain and straw) lb. per acre				
Dry winters . . .	11.73	5,631	5,829	196
Wet „ . . .	16.73	4,932	6,004	1,072

¹ The dry winters were those preceding the harvests of 1889, '90, '91, '93 '98 1901, '02, '03, '05, '06 '09, for which the results are averaged here; the wet winters were those preceding the harvests of 1892, '94, '95, '96, '97, '99, 1900, '07, '08, '10, '11.

When the ammonium salts are put on in spring it makes little difference on these plots whether the winter has been wet or dry because so much is supplied that the plant has more than it needs. But when the application is in autumn the case is very different; a wet winter now causes considerable loss.

In Hoos Field there are two adjacent plots unmanured for many years each of which is fallowed one year and cropped with wheat the next. On Broadbalk Field the plots are cropped every year. As the fields lie next to one another the experiments enable a reasonable comparison to be set up between a crop grown after a preceding crop, and one taken after a summer fallow. When there is no crop on the ground, *i.e.*, during the fallow, the nitrates accumulate and the various desirable changes already mentioned have a maximum chance of going on. If the nitrates remain in the soil till the following spring they increase the yield of wheat over and above what is obtained under continuous cropping. But if the winter is wet much of the advantage is lost, and the difference between the plots becomes considerably less. On an average after dry winters the crop preceded by a fallow is 38 per cent. higher than that preceded by another crop, but after wet winters it is only 16 per cent. higher:—

	Rainfall Oct.—March	Yield of grain, bushels per acre		
		After previous crop	After fallow	Difference in favour of fallow
Dry winters . . .	11.73	12.4	16.2	3.8
Wet „ . . .	16.73	11.7	12.8	1.1
Total produce (grain and straw) lb. per acre.				
Dry winters . . .	11.73	1,898	2,632	734
Wet „ . . .	16.73	1,795	2,085	290

A hot, dry summer, as we have seen, is favourable to the accumulation of nitrates and an improvement in the soil generally, and when this is followed by a dry winter the fertility thus gained is preserved by the cold storage so that the crop starts under very favourable circumstances. When the hot dry summer is followed by a mild wet winter much less favourable results are obtained because of the serious losses in winter, indeed the crop may be worse off than when the summer has been cooler because in that case less of the organic reserves of the soil have been changed to nitrate. Our investigations show that a hot dry summer followed by a dry winter is on the whole very beneficial to the soil, while a hot dry summer followed by a mild wet winter is likely to be harmful.

Two of the Broadbalk wheat plots illustrate this point very clearly. Plot 2B receives farmyard manure every year and the plant is dependent for its food supply on the decomposition process brought about by the soil bacteria and is therefore much affected by the seasonal factors just discussed. Plot 16 receives a complete artificial manure containing more than enough nitrate of soda to yield a full crop and is therefore much more independent of the character of the preceding season. Over a long period the two plots give practically the same yield, for example, from 1874 to 1912 the average crop was 34.2 bushels when dung was applied, and 33.1 bushels where artificials were used, or, taking the total produce, 6,374 and 6,540 lb. per acre respectively. But in the individual years the crops were not equal. The dunged plot came out much the best when the preceding summer (i.e., the summer before sowing) had been dry and the winter dry also, it gave nearly 6½ bushels more grain and over half a ton more total produce. But when the dry summer was followed by a wet winter the dunged plot suffered, and lost over 2 bushels of grain and nearly half a ton of total produce in comparison with the plot receiving artificials.

The actual yields are given in the table on the opposite page.

Of course we cannot attribute the whole of these effects to the character of the preceding season because the season of growth obviously plays a part, but the averages for the whole period show that the latter effects are largely smoothed out over the number of years.

It is evident from all this that when the farmer begins his year in October he does not start with a clean sheet so far as season is concerned, for his soil is much influenced by the character of the preceding summer. To a still greater extent is it affected in the spring by the character of the winter through which it has passed. The soil is very much the result

Seasons preceded by dry summers and dry winters¹

Rainfall of		Number of days on which the rain gauges ran		Yield of wheat bushels per acre		
Summer before sowing (July-Sept.) inch	Winter (Oct.-Mar.) inch	Summer	Winter	Dunged plot, 2b	Complete artificial plot 1b	Difference in favour of dung
5.63	11.91	8	45	36.9	30.5	+ 6.4
				Total produce, lb per acre		
				7,537	6,375	+ 1,162

Seasons preceded by dry summers and wet winters²

Summer before sowing (July-Sept.) inch	Winter (Oct.-Mar.) inch	Summer	Winter	Yield of wheat, bushels per acre		
7.72	17.19	17	93	32.5	34.6	- 2.1
				Total produce, lb per acre		
				5,459	6,577	- 1,088
Means for the whole period, 1874-1912.				Yield of wheat, bushels per acre		
6.93	15.18	13	75	34.2	33.1	+ 1.1
				Total produce, lb. per acre		
				6,269	6,500	- 231

¹ The harvests were 1888, '98, 1901, '02, '03, '05, '07, '09.

² The harvests were 1874, '75, '77, '81, '82, '84, '87, '87, '97, 1900, '11, '12.

of its past history, and among the items that go to make up its history the weather immediately preceding is no small one.

HOW CAN THE EFFECTS OF A BAD SEASON ON THE SOIL BE OVERCOME?

For practical purposes the bad effects may be reduced to three groups:—

The texture of the soil is injured.

The manufacture of plant food is interfered with.

Loss of nitrate occurs.

Whenever the texture of the soil has suffered the agriculturalist immediately turns to lime as the best remedial agent, unless, indeed, the winter is near and there is the possibility of laying up the land rough to be mellowed by the winter frosts if they come. Lime no doubt is useful after a bad season, but its action is only incomplete, for it does nothing to replace the lost nitrates or to prevent any further loss.

Given a sufficiently long spell of favourable weather at a convenient time a good man would soon improve matters considerably, but this is largely a matter of chance, and we want to have some means of soil treatment that will be helpful without having to depend on anything so fickle. Unfortunately only few experiments have been made in this direction, although it is a highly promising field that would well repay investigation.

One very hopeful method is by a development of catch cropping or green manuring. While the land lies bare in a hot dry summer or a cold dry winter it is gaining benefits, but when it lies bare in a wet season it is losing. The results given in the preceding pages show that land may easily lose as much nitrogen as is contained in 300 lb. of nitrate of soda, or a 30 bushel wheat crop, while it lies bare between harvest and seed time. By putting a catch crop in directly the harvest is over the main portion of this is saved; the catch crop can be ploughed in and it then returns the whole of the nitrogen to the soil. This ought invariably to be done after a dry summer unless there is some very good reason to the contrary.

During the very dry summer of 1913, some of the Rothamsted land perforce lay fallow because the mangolds failed, and, later on, the swedes put in to take their place did the same. But a great accumulation of nitrate took place, and in September the amount present was equivalent to 600 lb. nitrate of soda per acre on one plot, and 420 lb. on another. This stock was obviously too valuable to risk, and in anticipation of the need for saving it mustard had been sown on such of the land as was available; the vigorous growth as soon as the rain came was visible proof of the presence of abundant plant food. The mustard took up the nitrate and held it safe for the following spring.

There is a further advantage of green manuring. So far as our present incomplete knowledge goes, the ploughed in green crop does very much towards maintaining the texture of the soil during a bad season and improving it afterwards.

Thus green manuring has a steadying effect on the fluctuations of soil productiveness produced by bad seasons. This is well illustrated by a comparison of the wheat crop taken after clover (supplemented by artificial fertilisers) on the Agdell Field at Rothamsted, with that on the Broadbalk Field where no green crop is ever ploughed in but where a liberal dressing of artificials is given. On an average the Agdell plot gives a yield of 34½ bushels against 29½ on Broadbalk, and it is a much steadier crop. It has only twice fallen below 25 bushels, once in 1867 and again in that notorious year of disaster, 1879,

when it got as far down as $13\frac{1}{2}$ bushels. But the Broadbalk plot which has never been green manured fluctuates to a much greater extent; it has frequently dropped below 25 bushels, and in 1879 touched bottom at $4\frac{1}{2}$ bushels. The results are as follows:—

Year	Wheat grown after clover ploughed in (Agdell Field Plot) Complete artificial manure also supplied		Wheat grown without any clover or other green manure ploughed in (Broadbalk Plot 16) Complete artificial manure	
	Bushels of grain	Crop when average crop=100	Bushels of grain	Crop when average=100
1851	30 $\frac{1}{2}$	87.8	36 $\frac{1}{2}$	124.6
1855	39	112.2	32 $\frac{7}{8}$	111.4
1859	39 $\frac{1}{2}$	112.9	34 $\frac{1}{8}$	117.4
1863	45 $\frac{5}{8}$	130.6	55 $\frac{7}{8}$	189.4
1867	22 $\frac{1}{2}$	64.7	14 $\frac{1}{8}$	49.6
1871	24 $\frac{1}{2}$	71.2	13 $\frac{1}{2}$	45.8
1875	31	89.2	10 $\frac{3}{8}$	35.2
1879	13 $\frac{1}{2}$	38.8	4 $\frac{1}{8}$	16.1
1883	47 $\frac{1}{2}$	137.4	15 $\frac{1}{2}$	53.4
1887	42 $\frac{1}{2}$	123.0	39 $\frac{3}{8}$	131.3
1891	43 $\frac{1}{2}$	124.5	41 $\frac{1}{8}$	139.4
1895	39 $\frac{1}{2}$	113.7	32 $\frac{3}{8}$	110.6
1899	42 $\frac{1}{8}$	121.2	37 $\frac{3}{8}$	126.7
1903	27 $\frac{7}{8}$	80.2	26 $\frac{7}{8}$	91.1
1907	29 $\frac{3}{8}$	84.5	34 $\frac{1}{8}$	117.4
1911	38	109.4	40 $\frac{3}{8}$	136.9
Averages	34 $\frac{1}{4}$		29 $\frac{1}{2}$	

A systematic investigation of green manuring is in hand at Rothamsted, and this particular side of the subject is under examination. But there must be other ways of getting round the bad effects of an adverse season on the soil which a careful study ought to reveal. The problem is one of first-rate importance, for, with city stable manure getting scarcer, with all outgoing expenses tending to rise, and no visible prospect of any increase in prices, it is necessary for the farmer to make his soil yield all it will and reduce to a minimum all wastes and losses. Fortunately the problem does not seem to be beyond hope, and it ought to be solved by a systematic investigation.

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THE AGRICULTURE OF THE COTSWOLDS.

AGRICULTURISTS from every part of England who visited the Royal Show at Bristol this year must naturally have been interested in what they could observe of the farming practice of the County of Gloucester, but they can have seen very little of the Cotswold Hills unless they made a special pilgrimage with that object. Those who came from the North and Midlands passed through the beautiful and fertile vale of the Severn. Travellers from South Wales, and also from the extreme West, were hardly in the county at all until they found themselves in the Showyard, and only those from the South and East who came through Swindon may have had a view of a few miles of the Cotswolds in the neighbourhood of Badminton. But although the hills are physically unsuited to railways requiring easy gradients they possess many interesting agricultural features, and a charm that appeals to every Gloucestershire man.

As to the name, some etymologists derive "Cotteswold" (to give the name its ancient spelling) from two synonymous elements, the Celtic *Coed* and the Anglo Saxon *Weald*, both denoting a wood, and these hills were once largely covered with trees, of which beech was the prevailing species, yielding pannage for the herds of long-legged black swine, from which, in prehistoric times, neolithic man derived a great part of his sustenance.

The Cotswolds are part of the great chain of Stonebrash hills interspersed with clay vales, which extends from Dorsetshire through the Counties of Wilts, Gloucester, Bedford, Northampton, and Lincoln, into Yorkshire. In Gloucestershire they form an elevated tableland, which on the south flanks the Avon at Bath, on the west and north-west forms a steep escarpment, below which are the Vales of Evesham, Gloucester, and Berkeley, and on the east and south-east gradually dips to the Vales of Moreton and the upper Thames. Its greatest length is close on sixty miles, and the greatest breadth about fifteen miles, its area being about 300,000 acres. Along the western edge it rises from 700 to 900 ft. above sea level, and at two or three points in the northern part, notably near Cheltenham, it attains a height of over 1,000 ft. The only important depression in the escarpment is the valley leading into the Stroud Valley, through the latter of which the Great Western Railway runs from London to Gloucester.

Geologically the Cotswolds consist of eight divisions of the Jurassic series ranging from the Lias to the Limestone. The pervious rocks are chiefly the Great and Inferior Oolites, and the impervious strata consist of the Lias clay and Fuller's earth.

The porous beds of the Inferior Oolite are drained by springs thrown out into the valleys by the underlying Lias clay, as at Ullen Wood, Seven Springs, Charlton Abbots, and Sierford, and those of the Great Oolite by others similarly thrown out by the clay of the Fuller's earth, as at Hawling, Compton Abdale, Chedworth, Bibury, Perrotts Brook, Duntisbourne, and at Thames Head. But for the Fuller's earth the wide extent of country occupied by the Great Oolite would be an arid waterless tract, and it is therefore socially and agriculturally the most important geological feature of the Cotswolds, the villages and homesteads being invariably situated in the green and fertile but narrow valleys that break up the hills at frequent intervals, and add so greatly to the charm of the landscape. The chief rivers are the Churn, the Coln, the Windrush and their tributaries, the Leach, and the Ampney Brook. These and others, fed by prolific springs, are tributaries of the Thames, and the quantity of water poured into that river from the Cotswold Hills is computed to be about 100 million gallons per day, or about one-third of the quantity that flows over the weir at Teddington every summer day. The Severn receives the waters of the Chelt and Frome, and also of the Avon rivers rising in the South Cotswolds.

The surface soil of by far the greater part of the Cotswolds is called "Stonebrash," and is derived from the Great Oolite with traces of the marls of the Forest marble that was once superimposed, or from the Inferior Oolite similarly mixed with those of the Fuller's earth. While these in moderation add to its fertility they sometimes impart an amount of tenacity that makes cultivation difficult. The soil is seldom more than a few inches thick, and at the higher altitudes such as Cleeve Hill, near Cheltenham, the turf rests directly upon the rock. The valleys, formed in the far distant past by the numerous rivers then existing, are coated with transported material, of which sand and gravel are the chief constituent parts, mixed with the marls and clays of the waterbearing strata of Fuller's earth or Upper Lias. Few districts, however, exhibit the soil of the rock in so pure a state, or so free from the débris of other formations, as the Cotswolds.

The prevailing winds are from the west and south, and bring the rainclouds from the Atlantic that are broken up when they meet the colder air of the hills, and although this district suffered terribly from the disastrous droughts of 1911

and of the current year, the rainfall is generally sufficient for agricultural necessities. Near Cirencester, on the south-east boundary of the Cotswolds, the average for the ten years 1903-1912 has been as follows :—

January	2.40
February	1.81
March	2.62
April	1.93
May	2.23
June	3.15
July	2.22
August	3.26
September	1.71
October	3.75
November	2.37
December	3.22

30.74

The two wettest years of the decade were 1903 and 1912, each with rather over 40 inches, and the driest 1911, with less than 23 inches. The very variable quantity of rain falling on the Cotswolds in different localities is shown by the fact that over 50 inches was recorded at Colesborne in 1912. Although an excess of rainfall in this district is far less harmful than a drought, that year was an exception, the absence of sun having a most disastrous effect on both corn and roots, as well as hay. It may be observed that the yearly total rainfall is less important agriculturally than the season at which it falls. For instance, in 1903, the wettest year of the decade, but with practically the same total for the year as 1912, in January, February, and March, the average of about 7 in. was little exceeded, but in 1912 it was over 12½ in. In June, July, and August, 1903, about 11 in. of rain was registered, whereas in 1912 in the same months 14 in. fell, the average for the 10 years having been less than 9 in. In 1903 the Cotswold farmers had a good crop of corn, and good average crops of hay and roots. In 1912 one of the best and largest farmers on the Hills tells me his corn did not realise more than 2*l.* an acre all round, most of the hay was spoilt, and owing to the cold summer roots were only half a crop.

The Stonebrash is hollow and porous and easily worked when dry, but from the predominance of lime it becomes sticky and difficult to manage when wet, at which time the experienced cultivator leaves it alone. One of the earliest maxims learned by the Cotswold farmer is that patience is a virtue. Although the soil varies much in quality its character is similar, and it requires pressure and consolidation to enable the roots of plants to keep a firm hold in the ground, and a fine tilth to preserve the moisture necessary to vegetate the seed. As is always the

case where the soil is of only moderate fertility and chiefly in arable cultivation, the farms are large, and must be so since small holdings on this land will not bring in sufficient return to support the cultivator. On the Cotswolds the average farm is from 400 to 600 acres. There are some few holdings of 200 acres, which is about as small an area as is economically profitable, and others of 1,000 acres or more held by men with the necessary capital. This is not a district where small holdings of 30 to 80 acres are found, and it may safely be said that so long as the County Council is the medium through which such small holdings are supplied in the county, and so long as persons conversant with agricultural facts have to deal with the question, they will not be put forward as an economic proposition on the Cotswolds.

The nature of the fences is indicative of the fertility of the soil, and where the land is of better quality hedges are found dividing the fields, but walls built without mortar of the thin beds of stone lying close to the surface are the general rule. When well put together they make excellent and lasting fences, and are cheaply maintained.

In comparison with the light hill lands on other formations the Stonebrash contains a very small quantity of sand, and does not plough so easily as might be supposed. It does not go down kindly to permanent pasture, which is generally confined to the valleys and those parts where the clays and marls of the Upper Lias, Fuller's earth, and Forest marble are exposed, and in order to make up for the deficiency it is customary to have a proportion of the arable land in sainfoin, which forms a most useful temporary pasture. From 10 to 15 per cent. of the arable area is usually in this crop on hill farms, being cut for hay the first year, and kept down four to six years, or as long as it will stand, the feed being highly esteemed for sheep, another field being sown every year to take its place when worn out. It is generally remarked that whereas formerly sainfoin was often profitably kept down ten or more years it now seldom stands more than four or five years, and one of my correspondents attributes this deterioration to the 'English sainfoin having been crossed by bees with the French variety. With this exception the course of cropping does not vary much from what is customary on land of similar fertility in other parts of the country. On the better soils the well-known Norfolk four course system is practised, viz., wheat, followed by roots consumed on the land by sheep, barley, or oats with seeds mown for hay the next year and broken up again for wheat in the autumn after the hay is off, but this is more often varied by leaving the seeds down a second year and making it a five course rotation. On these arable hill farms a greater

head of live stock can be maintained by adopting this modification, which provides summer keep for ewes and lambs after the turnips are finished.

The necessity of continually consolidating this loose porous soil has already been emphasised, and this is well and economically done by the sheepfold, without which it would be impossible to produce the corn crops, from which a large proportion of the receipts from a Cotswold farm are derived. All the wether lambs and the ewe lambs not required for maintaining the breeding flock are therefore fed on the roots through the winter, having cake, corn and hay, and are brought out as mutton at from ten to fifteen months old.

In the neighbouring county of Wilts it is customary to keep a larger flock of ewes and sell out the wether and draft ewe lambs and the over-aged ewes at the autumn fairs, and although more is made of the sheep by this practice it is pretty certain that the Cotswold farmer would lose more by his crops than he would gain by his flock if he managed in the same way. Moreover, neither soil nor climate are here favourable for the production of early feed for lambs, and it is always a doubtful experiment to depart from the custom of the country founded on the experience of generations that so surely indicates the practice that is best adapted to the circumstances of each locality.

Until comparatively recently the necessary consolidation of the soil was affected by the treading not only of the flock but also of the oxen that were formerly worked on all hill farms, and which are now seldom used. The ox team was cheaply maintained, did not require the more costly buildings necessary for horses, and being sold out at six years old at good prices for grazing in the rich Somersetshire marshes, the draught animals were always growing into money. Although old and experienced farmers often remark that since they gave up their ox teams they are not so forward with their work, and their crops suffer more than they did from wireworm, more boys were required than with horses and they are now not forthcoming, whilst the value of old worked oxen is also much less than in the seventies of the last century, and fewer are kept every year. On the Continent, however, cattle, both oxen and cows, are everywhere used for all kinds of agricultural work, and there seems no prospect of their being supplanted by horses.

While the ox team is still occasionally found at work on the Cotswolds, another practice that was universal half a century ago is now entirely discontinued. This was the breast-ploughing and burning of old sainfoin and clover leys and foul wheat stubbles. The breast-plough, which, with the flail, may still

be met with as an object of antiquarian interest in remote villages, is a paring iron fixed on a wooden shaft with a crossbar. This was held with both hands, and the labourer pushed it into the ground from his thighs, which were protected by two narrow boards, cutting a thin slice, about 2 in. thick, which he turned over by moving the cross-handle. When dry, the turves were stifle-burned, being gathered up in small heaps regularly distributed over the field, with a handful of straw in the centre, which was set on fire, and when properly alight all the apertures were closed, wherever smoke was observed to issue a clod being immediately placed upon the spot. If the fire was too brisk the earth came out hard and in lumps, but when done properly it resulted in a fine powder, which, when spread over the field, ensured a good crop of turnips, with a saving of at least half the usual dressing and sometimes without any manure. This operation not only destroyed weeds, but also the grubs of wireworm and larvæ of other insects inimical to crops, and besides providing a fertilizer, the fine ashes were useful in getting a fine tilth to absorb and retain the moisture in the soil, without which the turnip seed would not vegetate. Although the rubbish in foul land is still burnt, the preceding cultivations are now effected by horse-drawn implements. The breast-plough was also often used to turn in the manure behind the sheepfold on the root land, which was believed to prevent loss of manure by evaporation, and to keep the soil moist for the barley crop to a greater extent than if it had been ploughed in according to the present practice. Breast-ploughing, however, was an expensive operation, even in the days of low-priced labour, and when labourers became less numerous and wages rose, it dropped out of practice. It is, however, considered by the older generation of farmers that since the breast-plough and ox team ceased to be employed it has been more difficult to get a plant of turnips than before.

Arthur Young riding over the Cotswolds in 1773, wrote of them as follows :—

“The crops were generally very poor, and mostly full of weeds—a strong proof of bad husbandry; and another yet more so, is their fallows being the same. About Burford and Sherborn their courses of crops are various. 1, some fallow for wheat; 2, dibbled pease; 3, barley. Others vary it: 1, wheat; 2, beans dibbled or barley; 3, pease. This is in the low lands about Sherborn, but on the Cotswold Hills they take a crop, and lay down with ray-grass and clover. They use all foot ploughs with one wheel, and four horses in length; plough about one acre a day. The open fields on the hills let in general for

about 5s. or 6s. an acre ; the low meadows about 20s. They reckon three quarters of wheat to be a very good crop, and as much barley and beans. The farms are in general large, indeed absurdly so considering the manner of managing them, for the farm-houses are all in the towns ; so that the farmers are at a prodigious distance from their lands ; they are in general from 200l. to 500l. a year at about 5s. per acre. Enclosing by no means flourishes, for from Tetsworth to Oxford enclosures are scarce, and from thence to North Leach few or none. Mr. Dutton has planned some at Sherborn, but the scheme goes on very slowly. It is amazing that a man of his considerable fortune can bear to live in the midst of such a vastly extensive property in its present condition. All this bleak unpleasant country is strong enough for any kind of trees, and might therefore be ornamented with fine plantations, which would yield considerable profit in a country wherein firing is so scarce. (Scarcely any wood. Coals brought from Gloucester cost at Sherborn 25s. a ton.) And farm-houses, barns, and all kinds of out-houses might be built on the spot cheaper, I apprehend, than in any part of England ; for the stone which everywhere lies almost within six inches of the surface forms the walls and covering slates of all the buildings in the country. The wages of labourers were 8d. to 10d. a day in winter and spring, and 1s. in summer, and 1s. 8d. in harvest. Butter cost 7½d. (The dearth of this article must be owing to nine-tenths of the country being arable.) Mutton cost 4d., and beef 4d. About North Leach they sow much sainfoine ; they prepare for it by turnips, and sow it with oats, and mow it every year for about ten, getting generally a tun or a tun and a half of hay from it. Between North Leach and Frog-mill the country improves continually until it becomes what may really be called fine. About Stowell, the seat of Lord Obedworth, I observed them for the first time ploughing with oxen, and to my great indignation eight large ones yoked to a plough, and skimming up the surface about three inches deep, which the ploughman, with a very grave face, called stiff work. About Shipton day labour used all winter to be 8d. to 10d. a day, but lately the farmers raised it to 1s. for the first time on account of the dearth of provisions, and gave the men 1s. 2d. in the spring, 1s. 6d. in mowing time, and 1s. 8d. at harvest for five weeks. Oxen are pretty much used. The ploughs here are very clumsy, the beams 10 ft. long, and all have wheel coulter. From Frog-mill to Crickley Hill, which leads into Gloucester Vale, the beauty of the

landscape is great. Six miles from the former, from the top of an hill is seen to the right a most prodigious prospect, over an extensive vale bounded by Cheltenham hills, which seem to tower quite to the clouds; the inclosures appear in a bottom under you, and are very distinct. All this country is full of picturesque views; the romantic spots of Crickley Hill are exceedingly fine. Rents run from 6s. to 12s. an acre, but in general 6s. or 7s. The farms above hill are large; from two to three hundred a year, and some more; but in the Vale of Gloucester they are much less. What grass they have they mow; very few beasts are grazed, and but few dairies, except in the vale, where they have all that fine breed of hogs which at Barnet market are called the Shropshires, with exceedingly long carcases, and long slouching ears, which almost train upon the ground, to make way for their noses. Oxen are much used, never less than six in a plough, frequently eight. They are reckoned the most profitable by some farmers, and horses by others. Wages are 8d. to 10d. in winter. The stoutest fellows often want work for 9d., and cannot readily get it. In hay time, for mowing 1s. and 1s. 2d.; in harvest 1s. 8d. Beef costs 4d., mutton 4½d., butter 7d., bread 5½ lbs. for 1s."

The cultivation of the soil for the usual crops is now as follows:—

Wheat.—On the Cotswolds it is not the practice to dung the land for wheat, and the seeds are ploughed early, a stale furrow being best, the teams being often at work in August. The roll follows the plough and makes the land firm. A seed-bed is prepared with drags and harrows, and about 9 pecks of corn is drilled early in October with the two-horse drill and harrowed in. In spring, the wheat is rolled and lightly harrowed, and when ripe is cut and tied by the binder. Hoeing is now seldom practised, and more thistles and docks are seen at harvest time than formerly. Occasionally, when the land is clean and in good heart, peas or barley are grown on a wheat stubble, but as a rule roots follow wheat.

Roots —After harvest the stubbles should be cultivated, and the acreage that can be treated in this way depends on the season. When weather permits, the cultivator is followed by the roll, and the rubbish dragged out and burnt, and if this can be done in the autumn it saves work in the spring, when the horses are more busily employed. A small acreage only of mangold is grown on hill farms, and the land for this is dunged and ploughed first. That intended for swedes and turnips is also dunged as far as the manure will go, and all is ploughed by

the end of the year if possible. In spring it is ploughed across, rolled, dragged, rolled again, and the seed drilled. The land often has 3 or 4 cwt. of salt broadcasted before drilling, and about 4 cwt. of superphosphate drilled with the seed. It is afterwards top dressed with 1 cwt. of nitrate of soda.

In the seventies of the last century, Professor Wrightson and the members of the Cirencester Chamber of Agriculture carried out numerous field experiments on the Cotswold Hills on the artificial manuring of swedes and turnips, the results of which were communicated to this Journal, and nothing has since occurred to cause any alteration in the practice that was then found the most successful. About 3 cwt. of superphosphate of lime or about 2 cwt. of superphosphate and 1 cwt. of dissolved bones is drilled with the swedes, and somewhat less for the turnips. In this district all roots are drilled on the flat. A small acreage of vetches is usually grown, and as lamb keep is often short in the late summer, rape or kale and early turnips are sown early in May, followed by the swedes for the fattening sheep in winter. Later on provision must be made for the ewes and lambs, and white swedes (a variety peculiar to the Cotswolds), late turnips and kale are drilled with this object.

Sometimes roots follow sainfoin, as after a field has been in this crop some years it is apt to get very foul. In extreme cases the land is often baulked, or raftered, in the autumn, that is to say, one slice is ploughed from end to end of the bout and the next at just double the distance, so that half only of the field is thus actually ploughed and the sod is turned over flat on the unploughed portion, the two surfaces touching each other. After being left a month or so to rot, it is pulled across with heavy drags, cross-ploughed, cleaned, and prepared for roots.

As soon as the plants show sufficiently they are horse-hoed, and this is done three or four times throughout the summer. Mangold and swedes are singled and seconded, but turnips only singled. Early in November the mangold are pulled and secured in the clamp, after which a proportion of the swede crop is pitted, or trenched, in the field to protect it against frost.

Barley and Oats.—The plough will have been following the sheepfold throughout the autumn and winter, and the land is crossploughed in February or March, dragged, rolled, and harrowed. When ready for sowing about three bushels of barley, or three to four bushels of oats are drilled per acre, harrowed, and lightly rolled in. In April or May the seeds for the next year's hay crop are either drilled across the corn or sown with the seed barrow, and lightly harrowed and rolled in. About 28 lb. of seeds is usually sown for a two years ley, the mixture varying according to circumstances. About four

bushels of sainfoin are sown per acre. On the Cotswolds both spring corn and roots require rain pretty frequently, especially when the early spring has been wet, and it has not been possible to get a fine tilth. Barley, as well as oats, is now generally cut with the binder. In order to get an even sample, barley was formerly mown with the scythe, laid thinly in swathe, and turned so as to expose it all as far as possible to the same amount of sun and dew. There are not now enough men in the country districts to do this, and few of these know how to use a scythe.

Seeds.—After harvest the young seeds sown in the spring corn are often lightly grazed by the lambs. In a growing season, and with a good plant, this does little harm, but it is better to keep off sainfoin the first autumn. The young layers will be greatly helped if it can be arranged to give them a dressing of farmyard manure in the winter to strengthen the plant and protect it from frost. Early in June the seeds are cut with the machine, after which they are turned with the side delivery rake, put up in small cocks, and stacked in ricks usually placed in the turnip fields for consumption by the sheep in the following winter. Sainfoin is cut as soon as it shows in flower, and requires more time to make than ordinary seeds. It is, however, well worth all the trouble that can be bestowed on it.

For some years after the middle of the last century it was customary even on the lighter Cotswold soils to plough with three horses at length, which required a boy to lead, besides the man driving the plough. The lack of boys working on farms has led to the general employment of pairs for ploughing, and it is found that the work can be got through as easily as with three. Formerly horses were not so well kept, and were unable to do so hard a day's work. At the present time they are generally allowed two bushels of corn a week, and are out of the stable seven hours a day in winter and eight in summer, but longer at hay time and harvest. They go out in winter at 8, and are back in the stable at 4, with three quarters of an hour's rest standing unfed and often shivering on the headland, while the men get their lunch and dinner. In summer the ordinary hours, except at hay time and harvest, are 7 to 4. In many other parts of the country where, when daylight permits, it is the practice for horses to work from 6 a.m. to 6 p.m., with two hours rest at midday when they are unharnessed and fed, more work is done, but on the large arable farms of the Cotswolds the fields are often at such a distance from the homestead that this could not well be managed. The result, however, is that while in winter three quarters of an acre may sometimes be ploughed in a day, it is very often considerably

less. In the Midlands, where collieries and manufactories compete with the farmer for labour, and wages are higher, both men and horses are longer in the field and move more quickly, and the cost of agricultural operations is probably very little more than on the Cotswolds. As the result of enquiries, I find the average number of horses employed is one pair to ninety acres, that is to 63 acres of ploughed land and 27 of grass, the proportion of arable land being thus 70 per cent.

The change that has taken place in the rural population is shown by the census returns for the county. In 1871 there were 20,506 persons employed in agriculture of whom 2,007 were women, whereas in 1901 the total number had fallen to 13,319 and there were only 182 women. The figures of the census of 1911 are not yet available. In spite of this extraordinary decrease it appears that there are generally sufficient labourers in this district, although experienced carters, shepherds, cattlemen, and milkers, are less easy to get than formerly. There are also fewer boys and lads coming on than used to be the case, and this points to a shortage of trained agricultural labourers in the future. For some years past many young men have left the country for service in the police and the railways, and recently the Colonies have offered them great inducements to emigrate. If this continues, and there seems every prospect that it will, it must inevitably result in a serious difficulty in obtaining the necessary labour to cultivate the soil.

At the present time ordinary labourers' cash wages on the Cotswolds are from 12s. to 14s. a week, with advantages in piece work and allowances, that probably increase the average earnings of the best men to 17s. or 18s. The usual hours worked are from 7 to 5 with $1\frac{1}{2}$ hours for meals, and in winter from daylight to dark. In hay time or harvest, when extra money is paid, work goes on until 7 o'clock or later. Shepherds, carters, and stockmen have about 15s., with allowances that make their average weekly earnings about 20s. Now that so much of the work of the farm is done by machinery and horses, the actual labour bill does not appear to be more per acre than when wages were lower, for although the day wages were less, more men were employed, and there was more well-paid piece work when all the hay was cut and turned, and the corn cut and tied by hand, and the labour-saving implements of the present day had not come into use. This may not be readily accepted, but the accounts of a farm with which I am well acquainted show that at the present time the amount actually paid for manual labour, after making allowance for small variations in acreage, is actually somewhat less than in 1858, when the ordinary day wages were at the rate of 10s.

a week, and carters and stockmen received much less than they do at the present time. The actual money paid for labour on an ordinary Cotswold farm where ram breeding is not practised, and where pedigree cattle are not made a speciality, averages about 20s. per acre per annum.

Turning to the live-stock of the district, the Cotswolds have been celebrated for centuries past for the flocks of sheep that were pastured on the wide and open downs. When the villa at Chedworth was excavated, evidence was found showing that the Romans spun and wove wool into cloth at that place, and we learn from Stowe's "Chronicles" that in the time of Edward the Fourth the fine Cotswold wool had a European reputation, and that the sheep were exported into Spain, where they "mightily increased and multiplied to the Spanish profit." But these had little in common with the sheep of the present day, being fine-woolled, and they were, perhaps, the ancestors of the breed known as the Ryeland. The modern Cotswold is believed to have been derived from the native breed altered in character by being crossed with the old Midland long-woolled sheep, and later again crossed with the Improved Leicester originated by Bakewell of Dishley about 1750. Rudge, in his *Agricultural Survey*, published by the Board of Agriculture in 1807, remarks that "the pure breed is become scarce in consequence of the introduction of the New Leicester by which it has been in some points improved." It is well established that in the early years of the eighteenth century Cotswold breeders regularly went into Leicestershire to buy rams, but for many years the breed has been entirely maintained by selection without crossing, and has now its Breed Society and Flock Book.

The Cotswold sheep of to-day is well adapted to the soil and climate of the district, although it has not maintained its position against the invasion of the Oxford Down. It is hornless with white or speckled face and shanks, the head carried by a rather erect neck set off by a curly topknot. The fleece is of long curled wool, in good flocks averaging 10 lb., which covers a wide symmetrical body. It is celebrated for constitution and early maturity, and easily reaches 20 to 25 lb. a quarter when sold to the butcher. When fat mutton was more saleable, and the sheep were pushed, 40 lb. a quarter was not an unusual weight.

It is characteristic of these hardy sheep that they are quiet in disposition and do not break bounds, and that they are not subject to footrot. They also have the peculiarity of individually spreading themselves over the field they are grazing, whereas Down sheep, that have perhaps acquired the habit from generations of close folding, feed in company. They enjoy some popularity in Canada and the United States of America,

and the rams are very largely used in East Anglia for mating with Suffolk and crossbred ewes.

The Oxford Down, by which they have been so largely displaced, was originally derived from crossing the Cotswold ram with the Hampshire Down ewe, which had in turn been produced by crossing the old Wiltshire and Berkshire breed with the Southdown, and has the good qualities of both its parents. The face is dark brown with a topknot, inherited from the Cotswold, a close and heavy fleece, and a wide and deep body on fairly short legs. It has attained great perfection, and is said to bear harder folding and have a greater disposition to early maturity than the Cotswold, though this is not admitted by the advocates of the latter. Like its parents, it possesses a Breed Society and Flock Book.

The average number of breeding ewes on a hill farm is about thirty-five to a hundred acres, and they are generally put to the ram about Michaelmas, though ram breeders who wish to get their lambs earlier in the year turn out in August. The practice of breeding from a few ewe lambs that are timed to produce their lambs later is increasing. Lambing takes place in a shelter made about a field barn or off farm buildings, or in a temporary pen constructed of hurdles and straw in a turnip field that has been cropped to provide suitable feed, and to which the ewes and lambs have access, returning to the shelter of the fold at night, where a rack of seed hay provides their evening meal. Italian rye grass and seeds with roots thrown to them daily follow, and the lambs are weaned in July, when they are run thinly on lattermath seeds or sainfoin, the ewes being given a bite on old seeds or bare pasture to dry up their milk. By September early turnips and rape are ready, and these are followed by swedes sliced with Gardner's turnip cutter, the wether lambs being pushed with corn and cake, and sold out when ready for the butcher. When plentiful probably about a ton of seed hay to the acre is consumed by the sheep on the turnip land. The ewes act as scavengers, and clean up what is left by the fatting sheep and ewe tugs.

Although a fair number of horned cattle are reared on the Cotswolds, not very many are bred, a few cows only being generally kept to provide milk and butter, calves being bought from the dairymen of the vale and weaned with those that are home bred. They are practically all shorthorns of useful quality, and one of my correspondents tells me he weans about eighty calves on ten cows, selling them fat about thirty months later, when he expects them to fetch 1,600%. The production of beef by feeding a number of bullocks through the winter in yards and boxes that prevails in the eastern counties is not customary, nearly all the roots being

consumed by the sheep, who manure the arable land more economically than would be the case if the dung had to be filled, carted, and spread, and at the same time give it the requisite firmness.

The position of the Cotswolds as regards railways is unfavourable for the sale of milk in the large towns, though this is done on a few farms that are not too far from a station, and are otherwise suitable.

Some good herds of Shorthorns are found on the hills, the dispersion of the celebrated Sherborne herd in 1848 having been the means of distributing a number of animals of the highest breeding over the district. Among the purchasers at this notable sale were Colonel Kingscote, and Messrs. Bowly, Garne (of Broadmoor), Lane, Mace, and Kendall, all of whom have now passed away, but whose names are well-known in the history of Shorthorn cattle. There is still a fine herd at Sherborne Park, and others in the neighbourhood in the hands of tenant farmers, and those at Cowley, Sarsden, Nether Swell, Brockhampton, Notgrove, and other places in the district, show that with skill and enterprise no better or sounder Shorthorns can be bred in England than are produced on the Cotswolds, and there is probably no herd in the world with a higher reputation than that at Aldsworth, which contains the descendants of the old Broadmoor stock. Although the Shorthorns at Kingscote have been dispersed, there are good herds in that neighbourhood, at Crudwell, Chedglow, Pinkney, and round Badminton, and when low prices prevailed in the eighties and nineties of the eighteenth century many farmers had the foresight to secure well bred animals, and have started pedigree herds on modest but sound lines.

Horses are not bred to any extent on the hills, although some farmers keep one or two brood mares to replenish their teams. The large arable fields divided by stone walls, and exposed to every wind that blows, are unsuitable for horse breeding, and most farmers buy suckers or sometimes two or three year old colts from their breeders, or at the fairs. Nearly all of the light horses come from Ireland, very few being bred, although Mr. Russell Swanwick has some thoroughbred mares of fashionable blood at the Royal Agricultural College Farm near Cirencester, and realises good prices for his yearlings at the Newmarket and Doncaster sales.

The nature of the country being unsuitable for dairying is also unfavourable to pig breeding on a large scale. Those that are kept show a good deal of the influence of the Berkshire breed, and the Large Black is seen in increasing numbers. There is a well-known herd of pedigree Berkshires at the Royal Agricultural College Farm.

From the system of agriculture practised in this part of the county of Gloucester it follows that the farm buildings are not of such an elaborate character as is necessary where the land is devoted to dairying and pig breeding, or where the greater part of the root crop is consumed in the winter by cattle for the production of beef. A number of old barns are seen, whose importance has largely diminished now that they are no longer occupied in the winter by men threshing corn with the flail, and these are made use of for storing the many new implements now required, weaning calves, and other purposes. All the horses are fed in one long stable, being tied up close together without partitions. About half lie in the stable at night, the rest being turned out into boxes after being watered and fed. In summer they lie out in a grass field or piece of old seeds. Two important considerations on the hills are water supply and Dutch barns, and money spent in their provision is of great benefit to the farmer.

The farm houses are old-fashioned and roomy, and although many old cottages have been pulled down, as not coming up to modern requirements, those that are left are generally speaking sufficient for the diminished agricultural population. In places where there is a shortage of cottages for farm labourers it is frequently due to the fact that many are occupied by men engaged in better paid industries, who bicycle to their work at a distance, and pay a nearer approach to an economic rent than the agricultural labourer can afford. It is likely that while the Old Age Pensions Act may keep people out of the workhouse, it may also tend to overcrowding in the villages, where already an appreciable proportion of the cottages is occupied by old people past work, and by widows.

In bringing this short account of the agriculture of the Cotswolds to a close I must express my great indebtedness to many of my agricultural friends, too numerous to mention by name, who have most kindly and readily given me information. I have also to thank Mr. John Sawyer, author of "The Story of Gloucestershire," for his valuable help in many ways. Had I not been assured of the assistance so generously given me I would have felt unable to accept the Editor's invitation to contribute a paper on such an important subject.

ROBERT ANDERSON, F.S.I.

Cirencester

WELSH PONIES AND COBS.

PREHISTORIC AND EARLIEST DAY PHASES.

THE history of Welsh Ponies and Cobs at first glance presents a field for operations almost illimitable in extent.

A writer might start with an investigation as to the form of life, if any, in the shape of type or proto-type, which existed at the time when great glaciers radiated from the heights of Snowdon, and flung themselves with their stony fragments into the valleys below. He might only desist from those efforts when he had completed a review of his own particular ideas upon the merits or demerits of the latter-day showyard winners.

From a geological point of view, Wales is perhaps more noted as a happy hunting ground for the mollusc hunter, but it is quite erroneous to imagine that, though she may have specialised in these marine form directions, she has unearthed no evidences of the mightier beasts of an ancient day, for it is a fact that in the two Gower caves in Glamorganshire, Paviland and Spritsail Tor, in the former of which was discovered the "Red Lady of Paviland," were found (*inter alia*) the detached hard prismatic molar teeth of at least two species of *Equus*—the *Equus caballus* and *Equus asinus*.

It was not so with the other osseous remnants of former animal life which were scattered about the floors of these rock dens. They for the most part had been gnawed into a state of comminuted splinter, and so dental more than skeletal evidence was only forthcoming. Sufficient, however, was found to establish the fact that the characteristic quaternary representatives of the Perissodactyle family of *Equidae*, with the contemporaneous *Pachydermata ruminantia*, and the larger sized carnivora were common enough, not only in South Wales at Gower, but also in North Wales, at Bryn Elwy, in the Cefn caves, in which were discovered the teeth and astragalus of an undetermined species of this same equine family. As there were two kinds of men in the Pleistocene days—the river drift

man representing the ruder civilisation, and the cave man the higher culture—so also, according to Professor Ridgeway (author of *Origin and Influence of the Thoroughbred Horse*), and Professor Cossar Ewart (Regius Professor of Natural History in the University of Edinburgh), the authorities on these subjects, there were two distinct sub-species of the class *Equus* which demand a passing reference.

The one called *E. caballus* represented the fully developed one-hoofed horse, which has been introduced to us as a more or less new-comer of the Pleistocene and not a survivor of the Pliocene era. His proportions were those of the middle-sized horse of the present day.

Another smaller type, about the size of the donkey, is alluded to by Professor Ridgeway as *E. plicidens*.

Professor Cossar Ewart tells us that there lived in England three or four kinds of wild horses. One allied to the *E. robustus* of Solutre, one to the *E. sivalensis* of India, or the *E. Stenonis* of Italy, and the other, with fine cannon bones, and short pillared teeth, to which he gave the name *E. Agilis*, and which includes the plateau type alluded to farther on, in connection with the subject of our mountain ponies. Who were the suspected progenitors of a more recently differentiated sub-species of this class, named by Professor Cossar Ewart, "*E. caballus celticus*," is a problem upon which information is wanting, and therefore this must remain a subject of speculation.

The differences between the two types, *E. caballus* and *E. caballus celticus*, appear to be as follows: that *E. caballus* (both the larger and smaller type) sported small hock (heel) callosities on the hind legs, as well as larger ones on the forelimbs, and also exhibited the regulation ergots (fetlock pads), the tail being covered with long hairs from base to end, while *E. caballus celticus*, in common with the Asses and Zebras, was destitute of these hall-marks of superiority and those external signs, which some have argued are vestigial footpads, whilst others have regarded them as the remains of scent glands. *E. caballus celticus*, too, rejoiced in a taillock fringe—a peculiarity of appendage that was in contradistinction to the more orthodox hair dressing arrangements of the *E. caballus*.

Though the bones that have remained tell a tale of the existence both of a stouter and of a more slender limbed sub-species, all signs of any external accessories or trimmings in the shape of skin or tissue, chestnut or ergot, have long since disappeared.

From the name one would naturally suppose that the Welsh pony derived his origin from this Celtic-called ancestor. As a

matter of fact the pony was so named because he was found in Ireland and the Islands of Scotland. Though the Welsh, we presume, represent the Aryan race of Celts as much as the Irish or Scottish Highlanders, the ponies in the Principality appear to have no affinity with the so-called *E. caballus celticus* or the inferior races of animals, Connemara, Icelandic, Faroe, Hebridean, Shetland, Russian and Norwegian; inferior because there was either a total absence or suspicious deficiency in the matter of these callosities, chestnuts and ergots, in them, while in the Welsh pony these outward and visible signs that are requisite to qualify for admission to the family of the *E. caballus* are found.

Whether this Celtic pony ever lived upon Cambrian soil is a matter of conjecture, but it must not be forgotten that in those early times no barriers were offered to the migration of Asiatic and African animals, from utmost East to utmost West of those drylands which included Great Britain and Ireland. It may be, therefore, that the so-called Celtic pony left his home in Central Asia and reached Europe before the arrival of neolithic man, in which case some of his species might have remained in Wales, as well as in Connemara and the outer Hebrides, where, undoubtedly, he has been found.

While the discoveries mentioned above would show that the fully developed *E. caballus* existed side by side with earliest man, there is unfortunately no trace of any rude pictorial effort incised upon antler or rib of deer, showing a representative of the pony world, in the full glory of upright mane, taillock fringe and dorsal band.

It is, however, pretty certain that what existed in the more eastern, also existed in the more western part of the country, and that when Julius Cæsar uttered his oft-construed comments on our race of horses, there existed somewhat similar specimens in that part of the country where dwelt the tribal Ordovices and Silures. It is, however, probable, that as the lands of the west were, from a climatic and altitudinous point of view, not so suitable for the breeding and thriving of such animals as those of the east, the horses were more pony-like, and the "wee beasties" and ponies more "puny still."

THE PRE-NORMAN HORSE OF WALES.

Many readers and writers in search of information upon the early history of our horse breeds, have fallen back upon Julius Cæsar as an authority, and even gone again through the commentaries he wrote upon his Gallic wars, with an avidity they perhaps hardly displayed in their earlier days. In referring, however, to the British horses, he (Julius Cæsar)

unfortunately omitted to hand down to posterity any clue as to their height. He spoke of them in terms of unqualified admiration, of their docility as chariot horses, of their activity as riding horses, and of their general superiority all round—and there he ended.

To those who do not underrate the claims of long descent, it is interesting to recall that horses of various breeds, and used for various purposes, were recognised as institutions and articles of value in the Laws of Howel, the Good Prince of Cwmru in the tenth century.

In the Editions of Laws, that he handed down to us, entitled "*Leges Wallicæ*," the small ponies were left ominously unmentioned. Was it that they were deemed unworthy of notice, or were similar ideas entertained of them as in a later Tudor period, for Henry VIII. gained almost as much posthumous notoriety from his attitude towards ponies as he earned by his methods of wifely treatment. Animals of the larger types, weight-carrying armour bearers, and prancing war horses that "scent battle afar" reigned supreme in his regal mind, and occupied his all-conquering thoughts.

The self-supporting little pony on the hill was in his opinion but a blot upon creation. On the indictment of not maintaining a "reasonable stature" His Majesty pronounced against them a sentence of annihilation, which, however, does not appear to have been carried out. What opinion Howel the Good may have entertained towards the lesser animal we do not, and never shall now, know. He brought, however, a wide range of intellect to bear exhaustively, and to good purpose, on the larger animals. In conjunction—we read—with an assembly very representative in appearance, consisting as it did of 120 prelates and 836 deputies from the Commots, he drew up and codified an exhaustive set of laws bearing on the subjects of horse-breeding, keeping and selling, which were subsequently approved by the Pope.

Prince Howel discoursed of three estates of the realm Equine. First there was the Palfrey, an animal reserved more for the delectation of patrician patrons, their pastimes and their pageants, for knights in tournaments, or as ambling hacks dedicated to the use of the lords and ladies gay. An old sixteenth century chronicler (Blundeville) once wrote, "Some have a breed of ambling horses to journey and travel by the way. Some perhaps againe a race of swift runners to runne for wagers, or to gallop the bucke and such exercises of pleasure. But the plaine countryman would perchance have a breed only for draught and burden." How amblers or swift runners worked or strove does not concern our theme. It is the Nag that carried the yeoman, or conveyed the goods and

chattels of the non-jousting "plaine countryman" that comes into our story here.

Next after the ambling horse comes the so-called Rowney, Runey or Sumpter. It is rather difficult precisely to place this particular beast of burden in an up-to-date category. *E. ehtellarius* (the animal that carried the pack saddle) was his definition in the days of Giraldus Cambrensis, and *E. villis* the uncomplimentary designation bestowed upon him in Spain.

The champion of the present-day Pack horse in Pembroke, or Devon, might possibly resent even the most distantly suggested affinity with such a lowly relation of the past. Both types of animals in their day—if history speaks aright of them—worked at a similar carrying trade.

THE PACK HORSE IN WALES.

To the Pack horse of a later day has always been assigned in fiction the responsibility of bearing illegitimate burdens in the shape of smugglers' casks, and other contraband goods, from sea coast to hiding place, as also the more legitimate, but often not less commodious, load of farmers' wives, on pillions.

Whether this Sumpter or Pack horse of a bygone day had a separate past worth investigating or a future before him is a present day question both in Pembrokeshire and Carmarthenshire, as well as in Devonshire. As concerns Carmarthenshire, the so-called Pack horses I have seen are Welsh cobs pure and simple masquerading under a new name, while the Pembrokeshire Pack horse, roadster or cob, I should unhesitatingly classify as a larger and better developed edition of the old Welsh cob.

THE LIGHT CARTER IN WALES.

The third estate mentioned of Howel as the working horse, the *Equus operarius* (the animal that drew the car), or the *Equus occatorius* (that draws the harrow), more especially invites our comparison with the specimens of our own times. This animal, we take it, is represented to-day in the light carter or collier of the Principality. Such a one was an old horse now dead that was visited by many last year (A.D. 1912), and by all regarded as a very remarkable old horse of a fine type, and original characteristics. He was an old bay horse, belonging to Messrs. Howells (Narberth, Pembrokeshire), and rejoicing in the name of *Stonecracker*—a name well earned, for, besides being used for stud purposes during the twenty-three years of his long life, he carried stone from the

quarries regularly. His sire was a forgotten collier, and his dam a Welsh cob, presumably of the *Old Trotting Comet* and *Cardigan* breed. Judiciously mated this old horse might have turned out a valuable asset to Welsh cob fame, and sired a famous race.

Old Blind Flyer, the sire of *Old Trotting Comet* (who in turn was the sire of *Old Welsh Flyer*) seems, from the description handed down of him, to have been a horse of the same type as *Stonecracker*. The owner of *Old Flyer* is described rather enigmatically in the pedigree as Schon Glanmor Clarach, which freely translated reads, "John who lived by the sea in the Valley of Clarach."

THE WELSH COB OF THE VICTORIAN ERA.

The world generally has adopted the habit of denoting styles, whether of architecture, furniture, or personal ornaments and dress, by the name of kings and queens. If we carry this principle into our earliest accounts of Welsh cobs and call them the Victorian cobs of Wales, we shall be working on chronological lines, as it is to the early days of Queen Victoria's reign that their origin is traced, and it was during her long reign that they obtained their notoriety.

In an attempt to trace the origin of the Welsh cob, the Hackney, or any similar type, it must be remembered that none of these breeds are, in the true sense of the word, pure. There can be no doubt that the so-called roadsters, nags, or cobs, were more or less admixtures of varieties. There comes a day in the history of all breeds, when the blend, after being persevered with, becomes a type, to which is given a distinctive title.

In this way the Welsh cob, having been inbred for some generations, became known universally as the Welsh trotting cob. The details of its origin are fully set out in the pages of the Welsh stud books. On referring to them it will be seen that in the 130 pedigrees given in the Welsh Cob Society's earlier volumes, there are some 126 absolutely indigenous Welsh cob sires that have left their mark as the sires of this particular type of animal. Many of these were descended from *Old Trotting Comet*. His stock and the stock of *Old Welsh Flyer*, his illustrious son, reinforced and improved by the infusion of Arab blood through the redoubtable *Cymro Llwyd*, became so notorious that most of their progeny were kept for stud purposes, justifying Herbert Spencer's formula, that each step in their evolution showed greater heterogeneity, greater coherence, and greater definiteness than the stage that preceded it.

Appended are the pedigrees of *Old Trotting Comet* and *Old Welsh Flyer* :—

PEDIGREES OF OLD TROTTING COMET AND OLD WELSH FLYER
By Charles Coltman Rogers, Welsh Stud Book, 1903

	Owner, Richard Evans, Cefn Cae Llangetho, Cardiganshire Breeder, Mr. Poole, Penrhyl.	OLD FLYER. Owner and Breeder, Schon of Giamor Olarach.	BLACK JACK Owner, Mr Pryse Pryse, Goggerdan	CAULIFLOWER.
				Do
OLD WELSH FLYER. Bay, 14-3, f. 1861. H. S. B. 856	OLD TROTTING COMET. Dark brown, 15-1½ f. 1840 (circa) d. 1861 H S B 834.	BESS. Mr. Poole's celebrated trotting mare	BLACK BESS	GOMER
				Do.
			Mr James' Colt of Llwynnionth- with-1844f, Aberystwyth	BEOHOYN BANK.
				Do.
Owner, Griffith Griffiths, Stag's Head, afterwards D. Evans, Rhiwarthen, Aberystwyth. Breeder, David Davies.	TROTTING NANCY. Owner, The Hon. Capt W. Vaughan, Crosswood.	CYMRO LLWYD. f. 1850 (circa), dun coloured	A Welsh Pony	Do.
				Do.
			Mr. William Crawshay's (of Oylarthia) Arab horse.	Do.
			BROWN. Mr. Jones, of Groven a very fast trotter	OLD COMET BROWN.
		* Dam unknown.		DERBY by CURREY COMB.
			Do	Do.
				Do.
			Do.	Do.

This pedigree practically contains all that is known, of the early history of the Welsh Trotting Cob of modern days.

Among the names of the descendants of *Old Trotting Comet* are many *Welsh Flyers*, *Cardigan* and other *Comets*; *Eiddwen*, *Trotting* and *Briton Flyers*; *Expresses* and *Cara-dogs*; *King* and *Welsh Jacks*; *Welsh Beaconsfields*, *Lions*, and *Dandelions*, which show what an impressive sire he must have been.

If *Old Trotting Comet* obtained a patriarchal fame, it is clear that his ancestors are worthy of notice. Thanks to the members of the Pryse family, and the evergreen memory of

Mr. David Evans (Hon. Member of our Welsh Pony and Cob Society), the problem, so far as it affects the sire side of the question, has been solved, for it has been proved that *Flyer*, the sire of *Old Trotting Comet* was of the able-bodied carter type, or the *Equus operarius* of the 10th century, indigenous to our hillside country, but not to be confused with the large Midland shire of to-day. The Welsh carter was a lighter built animal which drew the light cart of the country, the gambo laden with trouse on the hillside, and which sometimes carried the farmer and his wife on his back to market.

As to the histories of the dams of these trotting horses little if anything is known, save that their powers of endurance were generally ascribed, and with good reason, to thoroughbred influence, as the following will show:—

In the County of Cardigan lived a sporting family of the name of Lovedon Pryse. Their dwelling place was Goggerdan, in the vicinity of Aberystwyth. For many years they kept racehorses. To enumerate a few, *Buscot Buck* (f. 1841, ex. the *Reubens* mare), a winner of many classical races, *Cardinal Puff* by *Phantom* (f. 1820), *Doctor Eady* by *Reubens* (f. 1822), and another thoroughbred or two, one by name *Bobtail*, were used there for stud purposes. Although the Squires of Goggerdan kept a thoroughbred sire for their tenants, this generous privilege did not content them, as it is common gossip that surreptitious visits were arranged to be paid to the other stud horses. If the blanks in the pedigrees of Mr. Poole's trotting mares, Captain Vaughan's *Trotting Nancy* (vide Pedigree of *Old Trotting Comet*), could be traced and properly filled in, it is more than likely that the well-known names of turf celebrities of a past day would be found therein.

To many others in the Welsh Stud Book the same story of the introduction of thoroughbred blood would also apply. The famous *Express II.*, alias *Little Robin*, went back on his dam's side to the thoroughbred *Potsheen*, *Express III.* through *Old Hereford*, *Cardigan Comet* through *True Briton* (whose dam was *Arabian*), and the *Eiddwen Flyers* and *Beaconsfields*, through the before-mentioned Arab bred *Cymro Llwyd*.

INTER-BREEDING BETWEEN WELSH COBS AND PONIES.

Some writers contend that all that is best in the Welsh cob comes from the mountain pony strain.

The fact that the Welsh cobs were afterwards often mated with the smaller pony successfully admits of no doubt. *Eiddwen I.*, 14.1 hands, by *Old Welsh Flyer*, and on the dam's side sprung from pony sources, and *Trotting Flyer*,

14.2 hands (locally known as *Aberhenven-y-fach*), similarly bred, stand out with others as conspicuous impressive sires of smaller ponies. It is worthy of remark that in these cases such ponies reverted to the smaller size of the dams, and in spite of their cob ancestry on one side, invariably retained the pony character.

A similar experience in the case of thoroughbred and pony crosses is mentioned and explained in the Mountain and Moorland Pony Commission, where attention is called to the fact that those thoroughbreds whose back lineage disclosed pony crosses were best adapted to mate with ponies. *Rosewater*, the celebrated Polo pony sire of so many excellent pony types, was cited as an instance. He was descended from *Tramp* (winner of the Derby in 1813) foaled in 1810, who was reputed to have twelve pony crosses on his family escutcheon.

Science steps in and explains that animals with certain physical similarities due probably to a common origin in the past, mate satisfactorily, while animals with certain physical dissimilarities mate unsatisfactorily; or, transcribed in Mendelian language, that homozygous mating, i.e., animals with physical similarities, produces good, and heterozygous mating, i.e., animals with physical dissimilarities, indifferent results. What animals are homozygous one to another, and what are heterozygous can only be ascertained by experiment, a lengthy process, while the fact that the homozygous identity of characteristics may be of a limited nature enhances the difficulties of an interesting and deep problem.

THE HACKNEY AND WELSH COB QUESTION.

It is beyond contradiction that some Eastern Hackneys appear in the Welsh Stud Book.

Had the system of registration at first been better thought out, the Hackney Stud Book would not have contained the names of Welsh cobs, or the Welsh Stud Book the names of Eastern Hackneys. Some arrangement should have been devised whereby when a Hackney was mated with a Welsh the result would have had to appear in a separate section as Foundation stock, and if mated back with a Welsh cob, the second progeny allowed a number in the Welsh Stud Book. A quarter outcross might have bettered rather than injured the type aimed at, and an occasional outcross of the Hackney or Thoroughbred might in some cases result in a slight rejuvenation or improvement of the aboriginals.

Hackneys, however, now are no longer admissible for registration in the Welsh Stud Book, and by the system adopted of compiling the pedigrees the harm or confusion that might arise in studying old pedigrees is minimised.

The true descended Cardigan and Welsh cob, the Hackney-bred animal, the Rigmaden or Polo pony intermingled race, or the half Welsh cob and half Hackney-bred animal are easily recognised by anyone who studies the Stud Book, so that if mistakes are made the breeder has only himself to blame.

COB PREMIUMS.

In view of the fact that the Board of Agriculture, in conjunction with the Development Commissioners, are conducting a Native-bred Cob Revival in the Principality, the results so far achieved must be briefly alluded to.

There is no denying the fact that although both in the showyards and on the road the place of the Welsh cob has been to a great extent taken by the Hackney, some half dozen sires of undisputed Welsh blood were awarded Board of Agriculture Premiums, and several others without any Premiums were travelling Welsh districts two years ago (1911), and though the Welsh cob mare types may not be as plentiful as formerly, there were still many more than some had anticipated, to whom free nominations were given.

The results we hope, especially as some of the mares had been purchased by the Government for purposes of preservation to the country-side, will effect a renaissance in this old and useful native breed.

BOARD OF AGRICULTURE'S CERTIFICATES FOR SOUNDNESS.

A condition precedent in connection with the premiums given by the Board of Agriculture is that every animal must obtain the Annual Board Certificate of Soundness, which may be registered in its particular Stud Book.

This system, inaugurated in 1911, is becoming more widely known each year, and it is to be hoped that breeders will not patronise animals who do not possess this certificate. The Welsh Pony and Cob Society already accept this Government certificate as qualifying the holder for entry in their Stud Books and for competing for medals given at the Shows. At the same time the Society objects to the re-naming of any animal, as it is determined to prevent sires travelling under new names and so deluding the careless breeder.

THE MOUNTAIN AND MOORLAND PONY.

Professor Ewart, to whose work reference has already been made, traces the origin of domestic horses to three wild species or varieties, which he names the steppe, forest, and plateau varieties. To describe briefly their characteristics :—

(1) *The steppe pony*.—Long faced, Roman nosed, coarse and ram headed, which makes him peculiarly adapted to cropping short herbage; ears long; from eye to nostril a long way, as in the case of many cart horses of to-day; hoofs narrow, contracted at the heel; tail well set on. Represented by Prejevalsky's horse, but any evidence of this type's presence here in prehistoric times uncertain.

(2) *The forest pony*.—Face short and broad, and nearly in a line with the cranium, which has made him adapted for browsing on trees, shrubs and tall grasses; ears long; eye halfway between the top of his head and nostril; hoofs broad; neck and chest short; coarse limbed; the total length of metacarpal bone 5.5 times the width of shaft. Represented to-day by certain Highland and Iceland types.

(3) *The plateau type*.—Small, narrow face, ending in a fine muzzle; ears small and near each other; eyes large, full and prominent; long neck and oblique shoulders; hoofs varying according to its habitat, sometimes wide, sometimes narrow; ergots and hind chestnuts absent or small; taillock at root of tail well set on; slender limbed, and generally adapted to a free life on the plains; the total length of metacarpal bone is 7.5 times the width of middle of shaft. This type is represented by the Celtic pony of North Western Europe, and the somewhat specialised forms included in Professor Ridgeway's variety (*E. caballus libycus*). The northern or Celtic variety is characterised by the taillock, while in the Southern or Libyan variety this characteristic is at the most vestigial.

Accepting Professor Ewart's divisions, the Welsh mountain pony at least would appear to fall under the description of the Libyan variety of the plateau type, which is, perhaps, the purest of all. The fine muzzle, the slender limbs, the small pricked ears, the long neck, all proclaim him a true descendant of this variety.

The definition of the animal as he should be, in Part I. of the Welsh Pony Stud Book, is the definition of the plateau pony. The definition of the animal in Part II. is a definition of the plateau pony with a few characteristics of the forest pony.

In the Welsh Stud Books the smaller ponies have been divided into two parts, Part I. consisting of ponies 12 hands and under (which must be neither docked nor hogged), and Part II. of ponies 12.2 hands and under, in which section there are no restrictions as to docking and hogging. The book further differentiates between the pony with the finer quarters and the pony a little more massive in those parts; the one being generally described as Arab born and the other as cob

descended. The entries during the past four years have been as follows :—

SECTION A. PART I.		SECTION A. PART II.	
<i>Stallions</i>	9	<i>Stallions</i>	14
Re-entries	5		
<i>Mares</i>	133	<i>Mares</i>	83
Re-entries	22	Re-entries	3
<i>Stallions</i>	25	<i>Stallions</i>	12
Re-entries	5	Re-entry	1
<i>Mares</i>	342	<i>Mares</i>	52
Re-entries	31	Re-entries	5
<i>Stallions</i>	56	<i>Stallions</i>	19
<i>Mares</i>	360	<i>Mares</i>	144
<i>Stallions</i>	43	<i>Stallions</i>	17
Re-entries	3		
<i>Mares</i>	345	<i>Mares</i>	111
Re-entries	24	Re-entries	24

In these four years without including re-entries there were in

PART I. Stallions .	135	Mares .	1,180
PART II. Stallions .	62	Mares .	390

The presence of ponies with cob characteristics has been previously explained as due to a mixture of cob and pony blood. Many breeders in Wales have bred on these lines and sent into the show yards showy, trotting, sturdy little animals, more suited to the shafts than to the saddle.

PONIES OF SECTION A, PART I., WELSH STUD BOOK.

Probably no members of the *Equidæ* could lay claim to the title of a pure bred animal with more confidence than the truest types of the small ponies on the Welsh Hills, which appear in Section A, Part I., of the stud books.

An Arab outcross in the far back cannot be said to vitiate their claim to purity, as the Arab is recognised everywhere as a pure dominant breed. Of such undoubtedly is the well-known *Dyoll-Starlight* breed. *Starlight* belongs to Mr. Meuric Lloyd, and the prefix *Dyoll* read backwards (Lloyd) gives the clue to his prefix. He was foaled in 1894, was first shown in 1896, and retired from the showyard in 1901, having won first prizes at four R.A.S.E. Shows—Birmingham, Maidstone, York, and Cardiff—and two Crystal Palace firsts; since which time he has only been exhibited twice. He made two re-appearances for exhibition only, not for competition—once at Church Stretton in 1911, and again at the Welsh National Show at Swansea in 1912.

Shooting Star, a son of *Dyoll-Starlight*, and a great prize-winner, is now back again in Cardiganshire; *Greylight*,

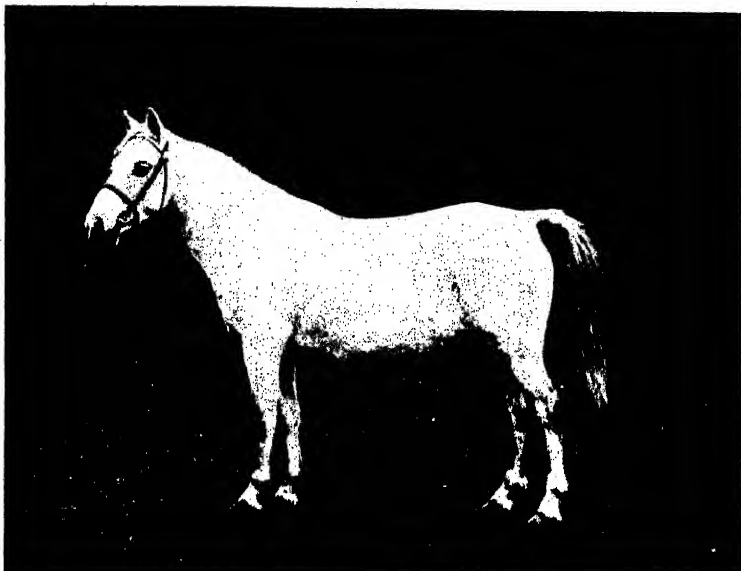


FIG. 1.—"NANTYRHARN STARLIGHT 2207."

The property of MRS. H. D. GREENE, GROVE, CRAVEN ARMS, R.S.O., SALOP.



FIG. 2.—WELSH COB, "KING FLYER 35."

The property of MESSRS. H. M. and H. W. JONES, MATHYRAFAL, MEIFOD, WELSHPOOL.

another successful son, was sold for the handsome sum of a thousand guineas to Australia, while *Dyoll-Starlight*, their sire, still remains in Carmarthenshire. Since *Dyoll-Starlight's* showyard career closed, many of his prize-winning progeny have been successfully exhibited.

Mr. Evan Jones's (of Manoravon) *Starlight* sold for 1,000*l.* to go to Australia. Sir Walter Gilbey's *Shooting Star*, and Mrs. H. D. Greene's *Ballistite*, constitute the old guard of the maturer celebrities, but *Dyoll-Starlight's* descendants hold in intermediate stages full sway to the two-year-olds of last year. That he and his progeny take after the Arab in appearance is generally admitted, but how he inherited these traits it is difficult to say, as his pedigree up to the second and third generation gives no clue.

The story of *Marske*, the sire of the famous *Eclipse*, foaled 1764 in the New Forest, the story of *Katerfelto* upon Exmoor, and their improving effect upon the ponies are well known, and often cited. Perhaps less widely known were the good effects obtained by the presence of *Merlin*, of direct descent from the *Brierly Turk*, turned down by an ancestor of Sir Watkin Williams Wynn on the Ruabon Hills. The so-called Merlin Ponies enjoyed a renowned fame. Others, too, turned down Arabs in Wales. Lord Oxford the *Olive Arabian*; Mr. Richard Crawshay, the sire of *Cymro Llwyd*; whilst Colonel Vaughan, of Rug, owned the Arab that sired the well-known *Apricot*.

The late Mr. Morgan Williams (of St. Donat's, Glam.), some seventy years ago, used Arab sires with his Welsh Pony mares, and kept them on the hills behind Aberpergwm. Mr. Meuric Lloyd bought *Moonlight*, the fleabitten unshod dam of *Dyoll-Starlight*, from the same district. To Arab blood undoubtedly, therefore, *Dyoll-Starlight* owes not only his sand-born appearance, but also his exceptional impressiveness as a sire.

There is a general consensus of opinion amongst exhibitors that the standard of ponies has improved very much of late years. For one good pony that appeared in the shows ten years ago there are a dozen to-day, and this in spite of the boom in the export trade due in some measure to the abolition of the United States duty on registered ponies. There is, however, still plenty of work to be done. The undrilled squadrons of shaggy, scanty fed, illbred ponies on the Welsh hills require a great deal of improvement.

To accomplish this, the inauguration of pony societies, the employment of the Commons Act, a careful selection of sires, and the extermination of all barren and bad mares, are all means to the desired end; but before any real progress can be made the little commoner of limited rights, the small-holder of meagre means and barer acres, and last but not least the

large owner, whose experience has been fast bound by tradition, must be made to see the importance of breeding only the best.

THE COMMONS ACT.

Although the interests of pony breeders in past years may have been neglected, this cannot be said to be the case now. The State has given them the Commons Act, while the Board of Agriculture is desirous of assisting horse-breeding in every way. The Development Commissioners have voted grants for this purpose, and a Commission was appointed in 1912,¹ specially to get at the needs of Mountain Breeds. Representatives from the New Forest, Exmoor, Dartmoor, and Wales sat in conclave, compared notes, issued recommendations, and to the best of their ability endeavoured to prescribe for their betterment. The Commission, in their Report, recommended financial aid only to such communities as had formed, or were willing to form, Pony Associations, and to make application for putting into force the provisions of the Commons Act.

This Act (8 Edw. 7 c. 44) in effect permits a majority of Commoners, after application and instituted enquiry, to make Regulations as to the turning out of male animals on commonly owned lands. At the present time, except in some half dozen cases or so, where some such regulations are in force, the Mountain ponies still run wild in the same uncared-for hordes as did their ancestors.

Before the passing of this Act, judicious pony breeders were absolutely at the mercy of any one negligent, malicious, or obstinate commoner, with the result that ponies, young and old, male and female, of all sorts of sizes and ages, cart colts and pony colts, two-year olds, inbred sons and daughters, and roving jackasses, were allowed to roam over the unfenced hills and interminable commons, and so to become the sires and dams of scallywags of every variety.

Under such circumstances it is surprising that the ponies bred on the hills have turned out as well as they have.

Enclosure Acts in the middle of last century did little to remedy these grievances, and until the Commons Act was obtained no permanent improvement was possible. With regard to this Act, in the seven years' campaign in its behalf I have never heard a single argument against it, or any

¹ Since writing these words, we have just been confronted with the sad announcement in the papers of the death of Lord Arthur Cecil, the esteemed Chairman of our Commission, and the able writer of its Report (in conjunction with Mr. T. F. Dale). We can only say in words sincere and sorrowful, that the Pony question has lost its most able and interested exponent, and that all Pony lovers, and many others, who enjoyed the privilege of his friendship, advice, and experience, are the poorer for the loss of an invaluable friend.

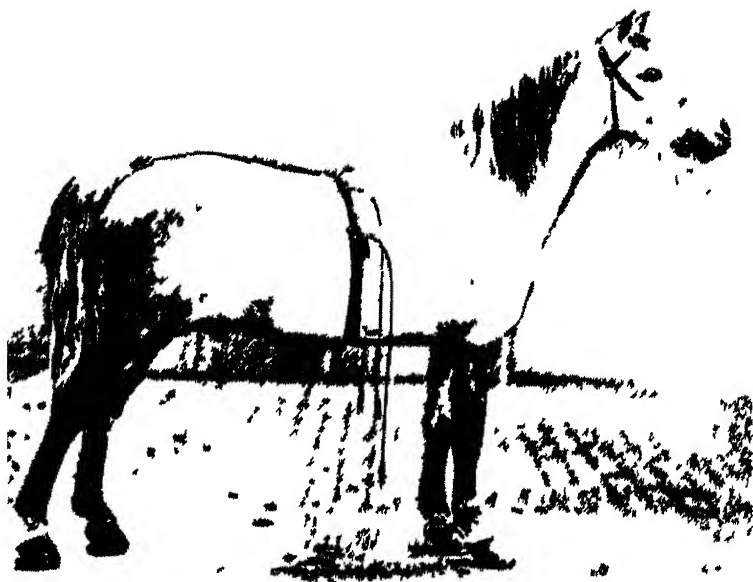


FIG 3—"SHOOTING STAR"
The property of SIR WALLER GILBEY, BT

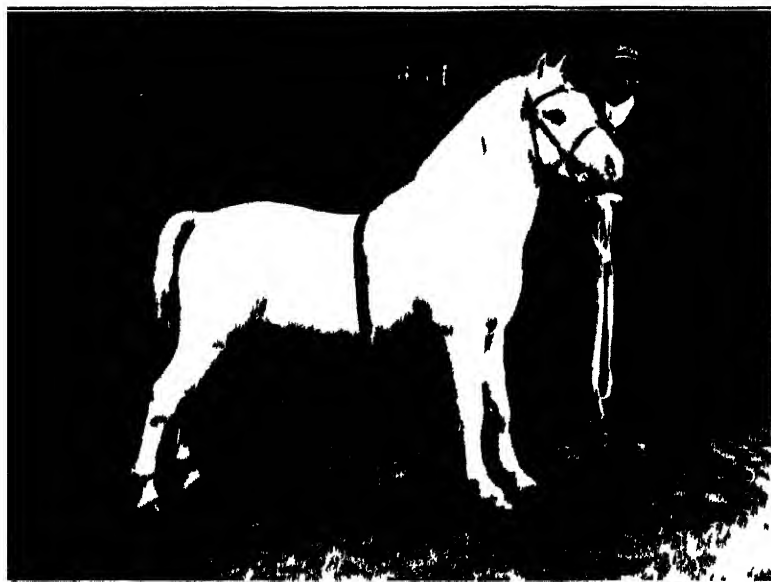


Photo by]

[P. Babbage

FIG 1—DYOIL SPARKLIGHT 4

The property of MR H. MURDO LLOYD DFLRYN ILANWRDA CARMARTHENSHIRE
1st and 2nd Welsh Mountain Pony Stallion Islington 1913 Spring Show of Polo and Riding
Pony Society

remarks that were unfriendly to it, which may be taken as a sign that it is generally approved.

A deputation to the Board of Agriculture challenged criticism, and interested friends, from time to time, asked questions in the House of Lords upon the subject, while it was laid before every County Council in Wales and submitted to all the agricultural organisations. It is satisfactory now to place on record the fact that this Act received the unanimous support and approval of all those whom it affected.

GOVERNMENT PREMIUMS TO MOUNTAIN PONIES

The Mountain Pony Commission in their report named four areas which they thought should qualify for conditional premiums, namely: Church Stretton, Eppynt Forest, Gower Common, and Penybont. It was pointed out to them that a large district lying on the borders of Brecon, Carmarthenshire, and Glamorganshire, which had been taking active steps to comply with their conditions, might well make a fifth area. A Pony Association had been started there. Membership had been thrown open to those who pastured their ponies on the northern slope of the Black Mountains to the left of Sawdde Fechanand, as well as to those who bred ponies in the area between Llangadock and Ffairfach, which included Tychrug Hill, Trapp, and the whole of Gwynfe, while to stimulate the interest taken in the subject, the writer of this article visited the district in the autumn of 1912, and gave two lectures. This was followed by a round up of ponies in the spring and an inspection for registration.

CHURCH STRETTON.

Of the successful applicants for these premiums in 1912, Church Stretton (who as a recipient of awards had previous experience) sent a first-class collection of animals that day, as a result of their progressive activities.

THE PENINSULA OF GOWER (FAIRWOOD COMMON PONY ASSOCIATION).

This Association, which also had previous experience of organisation, with the help of the Hon. Odo Vivian and others, also made gallant efforts in the right direction. Their report tells us that they had purchased three stallions, all sons of the famous *Dyoll-Starlight*, named respectively, *Tommy Timouse*, W.S.B. 558, ex *Star Tale*; *Starlight*, W.S.B. 471, ex *Star I*; *Starbram*, W.S.B. 495, ex *Dolly Gray* by *Biddwen Flyer II*.

Before the season commenced the Haywards drove the Common and all the other stallions were taken off. In doing this they came across no less than eight spray stallions of so

uninviting an appearance that, being unclaimed, they were sold for the Society's benefit.

On March 17, 1913, it was decided to adopt the Commons Act, with the result that the Board of Agriculture granted a premium of 5*l.* to each of these Association stallions. So briefly and simply reads this little history of action taken by wise commoners. So simply also should read the action taken in other places, if only sufficient interest could be stirred up.

PENYBONT.

Penybont alone of the selected areas has thrown away its chances of the proffered prizes for this year.

EPFYNT FOREST.

Perhaps the most sensational event connected with the distribution of the Board of Agricultural Premiums was the show held for that purpose on the Eppynt Hills in May last.

The place of rendezvous was an old historic wayside ale-house called the Drovers Inn far removed from all other dwellings in a district that to most was a *terra incognita*. There were present owners, breeders, farmers, and all sorts and conditions of men—but all, however, with one object in view, to see what could be done to improve the Welsh pony. There were unfortunately but few really good ponies present, and two of the best, although exhibited, did not compete for the premiums.

What the judge (Mr. T. F. Dale) thought of the exhibits has doubtless ere this been reported upon and communicated to the proper authorities. As onlookers we felt that here certainly was a huge tract of land that could be improved beyond recognition by following out the suggestions of the Mountain Pony Commission, and where, by a drastic change in conditions of pony breeding, a great change for the better could be effected in the course of a few years.

The two best animals, as mentioned above, did not compete. Of these, the one was "a startling coloured dark grey flecked with white," with a bright silver mane that flashed in the sun. The other was a dun pony, and of the same colour as were—we are told—the old dun-coloured horses of Upper Europe and Asia. These duns presumably formed the substrate of the grey Celtiberian horses, and were of that same yellow dun colour that is to-day known as *Isabella* (*un cheval Isabelle*).

In the actual competition, the one that was placed first was typical of the breed, but the bulk were not up to the mark, on the whole it must be admitted that the show of ponies on the Eppynt Hills in 1913 displayed the fact that there was ample room for improvement.

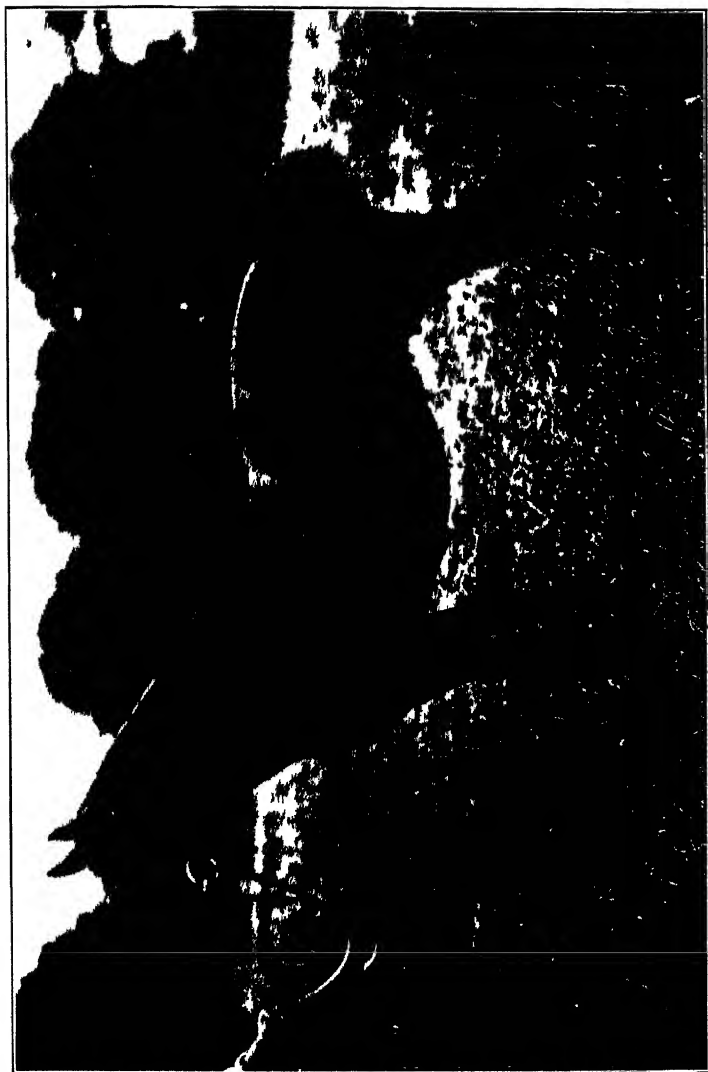


FIG 6.—WELSH COB MARL, LLWYN FLASLIGHT II 657 W S B
Champion Broad Mare, Old Welsh Cob Type Bristol 1913. Engraved by MR J MARSHALL DUGDALE

RECOMMENDATION OF MOUNTAIN AND MOORLAND
COMMISSIONERS, 1912.

On the fulfilment of certain conditions, a number of 5*l.* premiums for approved pony sires turned out upon the Commons were recommended by the Mountain and Moorland Pony Commissioners. At the outset of the formation of pony associations the initial difficulty experienced has always been the raising of a sum of money requisite to buy such animals, but as these premiums are to be of annual recurrence it is estimated that after five or six years duty on the hills, a good pony would about earn his original cost. This should be an incentive, especially to a judicious purchaser, nor will the obvious necessity of occasional changes discount the advantages of the annual five pound note.

Another suggestion with regard to the mares and filly foals put forward by the Commissioners was the giving of premiums to young mares until foaling. The method of awarding this prize money was to be that each filly foal should receive 1*l.*; in the two succeeding years 30*s.*, and upon the day she appeared with foal at foot, so long as she was not more than six years of age, a bonus of 4*l.* A good filly foal will thus have earned 8*l.* by the time she has come to breeding maturity, an incentive surely to the hill pony breeders.

A few words of caution to the small breeder will not be out of place. If the owner of the filly foal, fathered by the newly acquired premium pony, sells to the first buyer that comes along the whole object of the scheme will be nullified. The pony owner will not only lose the first-fruits of his new venture but he will have disposed of the animal which should go to make his stud remunerative, for to get rid of the improved fillies is not the way to breed up a first-class stud of ponies. Unless the new race of improved brood mares are jealously kept at home to breed for several generations, all other measures taken in the cause of betterment can be but labour lost, and the rate of progress will be nil. Ponies cannot be grown like potatoes. Pony breeding processes require patience on the part of the farmer if he really wishes to build up a breed on improved and sure foundations, and this little restraint will eventually repay him a hundred fold.

The Welsh farmer should think of the practice of the breeders of Arabs which has been going on for two thousand years. They have always registered on parchment the date of birth and the breeding of their foals, and jealously safeguarded the continuance of the strain, by refusing to part with the mother mares. Of such importance was this deemed that Mahomet embodied in the Koran an exhortation to his faithful

followers to sedulously preserve their horse breeds, that they might become a "source of happiness and wealth to many."

If the breeders of ponies will give a little more attention to the breeding of their animals and take advantage of the premium sires, a few years should show a marked improvement in their stock, and this might be an inducement to those in authority to act upon the Pony Commissioners suggestions and to grant the filly foal premiums mentioned above. The Government have offered aid to the restoration of our Old Native Breed of Cobs. It is the chance of a lifetime, a chance if unaccepted not likely to recur. It remains to pony breeders to take it or leave it. Pony associations are being formed in many places, and applications coming from several districts for an exercise of powers conferred by the Commons Act. Pony owners and commoners with rights of pasture upon hills and moorlands are beginning to get together and to realise that grazing rights can be put to a better purpose than the mere maintenance of a mixture of sires and a medley of mares.

In conclusion, I would venture to hope that ere long Board Premiums, Free Nominations, Pony Associations, and the Commons Act will become household words in rural Wales, and then, and not till then, will a new era dawn for this neglected but hopeful subordinate industry of agriculture.

CHAS. COLTMAN ROGERS.

Stanage Park,
Radnorshire

HEREFORD CATTLE.

THE exact origin of the Hereford breed has always been a subject of speculation and controversy. Several agricultural historians make mention of the breed in various works published in the eighteenth century, but their theories as to its origin are so conflicting as to be of little use in arriving at a correct conclusion. There is, however, no doubt that the district of Herefordshire was noted for its cattle from the earliest date. Speed, writing in 1627, mentioned that "the soyle of the County was so fertile for corne and cattle that no place in England yieldeth more or better conditioned." Marshall, writing in 1788, said the cattle of Herefordshire were the most valuable breed of cattle in the Island, and he gives a detailed description of the cattle as he then found them which would be almost correct to-day, certainly correct as to their markings. There may be some difference in the conformation from the modern Hereford which is somewhat less angular, shorter legged, with

less bone and more compact bodies. In those days the breed served the dual purpose of draught animals and beef producers, and the working oxen would consequently be bred as large as possible. To-day the type desired is a more symmetrical animal with less bone and more meat.

Mr. T. A. Knight, of Downton Castle, Ludlow, himself a noted breeder, and one of the early improvers of Hereford cattle, writing in 1790, puts forward the theory that the breed originated with an importation of cattle having red bodies and white faces from Flanders, made by Lord Scudamore who died in 1671, and other historians have put forward other theories.

It is at least established that a breed of white-faced cattle existed in the district many years prior to the date of Lord Scudamore's importation from Flanders, and this, as well as other facts which space will not permit of introduction here, seems to point to the probability that the breed is indigenous to the district and existed, perhaps not in its present type but still as a breed, from the remotest times. The most readily acceptable explanation of the colouration of the breed is that the aboriginal cattle of Herefordshire were of a dark red self-colour similar to the cattle of Devon, and that this breed was common to Devon, Gloucester and Hereford. Further, Herefordshire being on the Welsh border, the cattle would no doubt come in contact with the large white cattle of Wales, and thus the red and white colour would ultimately be established. The earlier prints of Hereford cattle show that the white markings were not so fixed as to-day, in fact many had white all along the backs, some had mottle faces, and others were of a light roan or grey. To-day cattle with red rings round the eyes or with red eyelids are met with and are preferred for very hot countries, as it is thought that they withstand the sun's glare better than those with unrelieved white faces. It is quite possible that Herefordshire breeders used Lord Scudamore's imported cattle to improve their own, and possibly even made them a standard to breed to, and that they therefore had something to do with the fixing of the type.

Anyway, the efforts of the early breeders very wisely took the course of fixing the colouration with the result that to-day it is possible to see thousands of Herefords without observing the slightest difference in the markings of them. Among the early breeders who so judiciously set about improving the breed, and whose efforts have been so well justified, should be mentioned the families of Tomkins, Galliers, Tulley, Jeffries and Hewer.

There is a consecutive record of Hereford cattle ever since the formation of the Smithfield Club in 1799. At the first show of the Club in that year Mr. Westcar, of Buckinghamshire,

a well-known grazier and feeder, won first prize with a Hereford ox. All breeds were then shown in competition, and during the years this system remained in force the Herefords won 185 prizes against the Shorthorns 82, Devons 44, Scotch 43, Sussex 9, Longhorns 4, and Crossbreeds 3.

Hereford cattle have made their way into every civilised country in the world, and one of the most remarkable facts noticeable to the student of the breed is that in England they have not extended their area as would at first be expected. Of course Hereford steers are to be found in almost every county, especially in the grazing districts, but the registered herds are mainly confined to Herefordshire and the adjoining counties.

This seems difficult to explain, especially when one remembers the adaptability of the breed. Of course there are Herefords in many counties as far west as Cornwall, and as far north as Scotland, but not in great numbers. Nevertheless the bulls are in great demand for crossing purposes in all parts of the United Kingdom. In Ireland there are many registered herds of great excellence, the breed having been first introduced into that country in 1775 by the Duke of Bedford.

The Hereford sire is possibly the most potent and impressive sire in the world, and this quality, combined with other distinctive characteristics of the breed, has won for him a place in every country where the native cattle need grading up. The breed was introduced into the United States in 1817, and to-day is supreme there. As some indication of their remarkable success in the States, it is only necessary to state that each year from 25,000 to 30,000 pure bred calves are registered in the American Hereford record, apart from many hundreds of thousands of grade Herefords, having one or two pure crosses.

The first consignment of Hereford cattle to the Argentine and Uruguay took place in 1858, and to-day the breed is to be found in every state of the South American Continent, and during the past ten years the demand for Herefords in South America has been steadily on the increase.

Australian breeders first imported Herefords as far back as 1839, and they seem particularly adaptable to the droughts so prevalent in that country, surviving on the same stations where other breeds die of hunger and thirst. Most European countries have purchased Herefords from time to time, and recently shipments have been made to Japan. Large shipments have been made to South Africa and Rhodesia, and there is every prospect of a very successful future for the breed in these countries.

Hereford cattle are noted for early maturity and aptitude to fatten. They are unsurpassed as grazers, and will readily fatten on grass alone.



Photo by

TWO YEAR OLD HEREFORD BULL

W. M. Bush, Hereford

The grass-fed Hereford beef is in great favour, and commands top price on the London market during the season, having that marbled, well-mixed appearance that butchers and consumers prefer. A Hereford carcass carries most flesh where the best joints are cut. For winter feeding no breed gives better return for the amount of corn consumed than the Hereford, and more Herefords can be carried to the acre, both at home and abroad, than any other cattle.

The following figures as to average live weights are taken from the Smithfield Club records, and of course refer to animals fattened for exhibition —

Steers under 2 years old	1 950 lb
" " 3 " "	1 820 "
" over 3 " "	2 115 "
Heifers under 3 " "	1 595 "

The average daily gain in live weight at the same shows being —

Steers under 2 years old	1 85 lb
" " 3 " "	1 66 "
Heifers under 3 " "	1 45 "

Herefords are supreme as ranch cattle, roughing it in extremes of heat or cold. They thrive and fatten on scanty food, and are well suited for countries where the grass is rough and the stock hardy, and there is a great future for the breed in the more southern of the South American States and in South Africa, where less hardy constitutioned breeds would succumb. They are also remarkably good travellers, and can walk longer distances in search of water than any other cattle.

In addition, or to be more correct, because they are so robust and hardy, Hereford cattle are remarkably free from disease and have great powers of withstanding infection. As a breed they are practically free from tuberculosis, only about 8 per cent. reacting over a very large number of tests. This is a most important point in their favour now that so much attention is being paid to tuberculosis in cattle, and no doubt the mild climate of their native home, which adapts to a system of open-air management (see further on), is responsible for the apparent immunity they enjoy. If they are so confident of the freedom of their blood from disease, they nearly all of them sell their carcasses without object to the tuberculosis test. This circumstance, however, is not so much a proof of their immunity from the disease as it is a proof of their hardiness, naturally cautious about their own health, and so they are not so much affected by the disease as other breeds.

calf at three years old, they frequently live and continue breeding up to fourteen or fifteen years of age, and instances have been known of cows much older than this.

It is often stated that Hereford cattle are bad milkers. This is entirely due to the system of management. The beef-producing qualities of the breed have been developed somewhat at the expense of the milking propensity. Also the practice of letting the calf run with the cow has had a bad effect on the milk production, as the calf does not require all the milk the dam naturally gives, and nature in time limits her supply to the requirements of the calf. Hereford milk is very rich, containing a large percentage of butter fat, and where Hereford cows are brought up to the pail they prove good milkers. Many Hereford breeders have kept one or two cows specially for milk for their household purposes, and have developed their milking properties with very satisfactory results. There is a herd of pedigree Herefords in Wiltshire that has been kept entirely for milk for over a century, and the milk average for each cow is very great. The calves are taken from the dams and the milk is sent to a large creamery in the district. This herd has won prizes at the Bath and West Show against milking cattle.

The cows are splendid mothers, and their milk is so rich that their calves always look well nourished.

The usual system of management of Hereford cattle is to keep them under conditions as natural as possible, and hence their healthy constitution. The young stock, yearlings, heifers, &c., frequently run out all the winter, only having a little hay hauled out to them when the ground is covered with snow or when the grass is frosted. Under this treatment they develop coats as deep as one's hand, and maintain themselves in good condition.

It is arranged for the calves to be dropped as soon after the 1st of January as possible on account of the age for show-yard purposes being always calculated from this date, and the calves are not weaned until about eight months old. The dams are thus ready to take advantage of the spring grass, and purchasers from abroad are also suited, as they prefer to have animals calved as early in the year as possible.

To give an instance of the practical system of management of a Hereford herd, the writer cannot do better than quote Mr. Arthur P. Turner, of Hereford, one of the oldest and most successful breeders of Herefords.

Mr. Turner says that he endeavours to get the calves dropped in the spring months, January, February and March. They run in the pastures with their dams until the autumn. The heifer and the steer calves are then weaned and fed upon

hay, roots and about 2 lb. of crushed oats and cake each per day. Those to be kept for bulls of course get more liberal treatment. When turned to grass the following spring the young stock get no extra food. In the second year they are fed upon straw and turnips, with sometimes a little hay. The cows get straw and a few roots until they calve, afterwards a little hay in addition. The stock bulls are kept inside, but are not fed at all highly. When about two years old they usually live upon hay and roots, and in the summer upon cut grass, vetches, clover, &c.

Mr. Turner houses all his stock in winter in open sheds, cowhouses and stalls. His buildings are made of wood, and are very cold and draughty. He thinks his cattle do better in these buildings than in covered yards and closed boxes. They are hardier and less liable to chill and other diseases. The cows and heifers get a few hours run in the pastures daily during the winter. Abortion is almost unknown amongst Mr. Turner's cattle, and during forty years he did not have more than one case per year. This immunity he attributes to a regular system of feeding and always endeavouring to keep the cows in the same condition. The few male calves made into steers are sold to the butcher before they are eighteen months old.

Wherever beef is required, or in foreign countries where the cattle need grading up, there the Hereford bull is found, because first of all the Hereford will cross satisfactorily with almost any breed, and secondly because the Hereford bull is so impressive a sire that he leaves his stamp on his get more than any other breed. Cross-bred calves by a Hereford bull almost invariably have correct Hereford markings, no matter what colour or breed the dam may be. On the ranches of the far West the Hereford bull has proved his worth as a cross, and steers in thousands can be seen in the Chicago stock yards, all as like as peas, though only grade cattle with one pure cross. The cross is nearly always from the Hereford bull, the crosses with the cow not being so common.

The following averages obtained at auction sales for the dispersion of breeders' herds will convey a better idea of values than can be got by quoting outstanding prices for individual animals with showyard records.

At a sale by auction in September, 1912, of the herd of Mr. Arthur P. Turner, 163 animals including calves averaged 63*l*. each, whilst nineteen animals sold for over 100 guineas each. The highest prices were 360 guineas for the stock bull "Mariner" (28468), 300 guineas for a bull-calf named "Rufus" (sold for export to New Zealand), 160 guineas for another bull-calf (for South

America), whilst the highest price for a cow at this sale was 210 guineas.

At Mr. R. Bright's sale at Ivington, Leominster, on October 26th, 1909 :

	£	s	d
81 Cows and calves averaged	44	7	5
27 Two-year-old heifers	85	12	10
27 Yearling ditto	21	19	0
4 Bulls	63	15	9

At Mr. W. T. Barneby's sale held at Saltmarshe, Bromyard, in October, 1909 :

	£	s	d
105 Cows and calves averaged	30	17	0
21 Two-year-old heifers	87	16	0
19 Yearlings	25	8	5
6 Bulls	78	4	6

The above figures are enough to inform the reader of the current run of prices.

The dispersion sales of breeders' herds are chiefly held in the autumn of each year. The Hereford Herd Book Society holds two annual sales of bulls in March and April at Hereford, when some two or three hundred bulls, chiefly yearlings and two-year-olds, are offered for sale by public auction.

There is no breed of domestic live stock of a more uniform type than the Hereford cattle.

This uniformity of appearance is undoubted testimony to purity of blood and the influence of many years of careful study and use of hereditary principles on the part of Hereford breeders.

The colour is red on the body with white face, crest, brisket and underparts of the body, hence the title "white face," and the stamp of the white-faced Hereford bull can be seen wherever the breed has roamed. The conformation of the breed is almost, if not quite, as uniform as the colouring.

The following may be taken as a fairly full description :—

The bull should have a moderately short head, broad forehead, horns springing straight from the side of the head and slightly drooping, and of a waxlike appearance, any black on horns being objectionable.

The eyes should be full and prominent.

Nose broad and clear of a flesh colour. The body should be massive and cylindrical on short legs. The top and underline should be straight. The neck should be thick with well developed crest. Shoulders sloping but lying well open at the top between blades.

Chest full and deep. Ribs well sprung. Flank deep. Buttocks broad with lower thigh well developed, coming down to hocks (meat to the hock). The tail should be well set on.



Phot. by

TWO YEAR OLD HEREFORD HEIFER.

W. V. Butts, Hereford

and evenly filled between setting on of the tail and hipbones (hooks). The hipbones should not be prominent.

The whole carcass should be covered with firm flesh. The skin should be thick and mellow to the touch and well covered with thick soft curly hair of a rich red colour, very silky to the touch. The hair of face, top of neck, and underparts of the body should be perfectly white.

The cow should be more feminine in appearance. Head and neck less massive, and the eyes should show a quiet docile disposition.

The whole appearance should denote the placid and docile disposition to be expected in a breed so noted for its aptitude to fatten.

The following scale of points for judging Hereford cattle which has been adopted by the Herefordshire County Council for the use of their students may be of interest :—

For Bulls.

General appearance. 26 points, as follows :—

Maximum points

Carriage of animal when walking	3
Size and weight according to age	5
Colour and markings	4
Hair and skin. Skin thick and mellow to the touch, with thick soft hair	5
Flesh. Body well covered with flesh which is firm and mellow to the touch and free from patchiness	9

Head. Head large, broad, and deep, with prominent eyes and horns of moderate size.

Neck. Good erect clean throat, the whole sloping gradually down to the shoulders.

Forequarters. 3 points.

Shoulders not prominent, shoulder blades well covered with skin and well covered with hair.

20 East Street, Hereford. The society was formed in 1878, and consists of some 500 members. The society publishes the annual herd book, which contains each year the pedigrees of about 700 bulls and 4,000 to 5,000 cows and their produce. Forty-four volumes of the herd book have been issued, the first having been published in 1862 as Eyton's Herd Book of Hereford Cattle; the first eight volumes were published by the late Mr. Thomas Duckham, to whom more than any one else is due the credit of keeping the records of pedigrees in the early days of registration. Since 1884 the herd book has been closed, *i.e.*, only the produce of sires and dams already entered are accepted for registration, so that there cannot be other than great purity of blood. The United States, Argentine, Uruguay, Canada, Australia, New Zealand, and South Africa each have Hereford herd books of their own.

W. G. C. BRITTEN

(*Secretary, Hereford Herd Book Society*)

20 East Street,
Hereford.

SHROPSHIRE SHEEP.

THE history of Shropshire Sheep has been dealt with by many writers and though the origin of the breed is more or less lost in obscurity there is a general consensus of opinion that it existed in Shropshire and Staffordshire in the early years of the 19th century.

Morfe Common, near Bridgnorth, Shropshire, occupying an area of about 4,000 acres on the Borders of the River Severn, was certainly one of the homes of the original Shropshire and this idea is supported by Professor Wilson, who in his report of the breeds of sheep in the Journal of the Royal Agricultural Society, Vol. 16, states that when the Bristol Society in 1792 procured as much information as possible regarding sheep in England they reported as follows in reference to Morfe Common Sheep:—

“On Morfe Common, near Bridgnorth, there are about 10,000 sheep kept during the summer months, which produce wool of a superior quality. They are considered a native breed, are black faced, or brown, or spotted-faced horned sheep, little subject to either rot or scab, weighing the wethers from 11 to 14 lb., and the ewes from 9 to 11 lb., per quarter, after being fed with clover and turnips, and clipping near 2 lb. per fleece; exclusive of the breeching. This appears to be the original Stock from which the present breed of Shropshire Sheep has sprung.”

Youatt, alluding to the Morfe Sheep, says it was probably this species of Shropshire wool that in 1343 was the choicest and dearest in England, and at every succeeding period when mention has been made fit justice has been done to its excellent quality. He further adds in a foot-note: "The Shropshire short wool must not be quitted without another testimony to the degree of estimation in which it was formerly held."

Joseph Plymley, Archdeacon of Salop, writing on the Agriculture of Shropshire in 1803, describes a somewhat similar sheep to that found on Morfe Common. Plymley says there is a breed of sheep on the Longmynd, a hilly range near Church Stretton, with horns and black faces that seem an indigenous sort. They are nimble, hardy and weigh nearly 10 lb. per quarter when fatted. The fleeces on the average may weigh $2\frac{1}{2}$ lb.

The author of a very interesting and valuable work on the commercial politics of the times in 1694 used the following language:—"It is no small advantage to trade to be fitted with a complete sortment of goods abounding in the middle sort of wools excellent of its kind and suitable to a middle sort of people, which are far the greater number, and herein is chiefly our strength, not that we in the least fall short in the merit of our fine wool, our Herefordshire and our Shropshire wool is not to be equalled in its kind by any part of the world and suitable to almost any degree." A page or two afterwards this author again speaks of the Shropshire and Herefordshire wool in these terms:—"So comprehensive in excellency is our English wool that it may be improved to the thickest felt which will secure from the most violent storms of wet and be likewise drawn to the finest crape and still carrying a merit with it and thereby rendering itself a most acceptable commodity both in hot and cold climates."

Smith in his *History of Wool and Woollen Manufactures* (*Chron. Rusticum*, published 1641), quotes the wool of Shropshire as being the choicest and dearest in England, and this is confirmed by Anderson in his "*Origin of Commerce*," giving prices for English Wool in 1343.

Cannock Chase in Staffordshire, an unenclosed Common, was also the habitat of a very similar and equally valuable race of a somewhat heavier type from which many of the best flocks in Staffordshire were originally descended.

William Pitt, writing in 1817, describes a grey-faced hornless sheep with fine wool, natives of Cannock Chase and Sutton Coldfield. These, he states, are the native common sheep, their characteristics are grey faces, lighter or darker, varying in

white from white to black in different shades, the legs the same colour, wool fine, closely and compactly covering the carcass. The better breed of these sheep are similar to the South Down and not inferior, their general fault being a want of thickness in proportion to their length. This is confirmed by a Lincolnshire grazier, who in 1833 wrote thus :—"The Cannock Heath sheep are bred upon an extensive waste so named in Staffordshire. They are generally grey-faced without horns, bear fine wool and from many points of similitude between them and the Southdown it has been thought that they have been derived from the same stock. The bone, however, is coarser, nor do they possess the same beauty and compactness as the Southdown. In some of the neighbouring counties to Herefordshire, both in England and Wales, there is a breed of sheep very much resembling the Ryelands, known as the Shropshire Morfe. They bear wool of fine quality, generally have white faces and legs, though sometimes are a little freckled, are light in the bone and have small clean limbs. There are two species, which from inattention to the breeds, are often blended, the one polled and the other having small light crooked horns."

A report to the Board of Agriculture in 1796 speaks of Sheep on a Common near Market Drayton in the north of the county of Shropshire, and at Kinver Hill, and mentions the name of Dyott of Freeford, near Lichfield, as an early breeder.

The *Farmers' Magazine* alluding to the 1857 Salisbury Meeting of the Royal Agricultural Society, contains the following :—"The disposition of the Royal Agricultural Society to recognise more generally the different breeds of sheep in England by instituting a prize at the last meeting (Salisbury) for any short-wooled sheep not Southdown, has already had a beneficial tendency, inasmuch as it has been the means of bringing more immediately before the public a breed which even now is but partially known, and which but a few years ago was in utter obscurity. The original Shropshire can be traced to the Longmynd and other adjacent mountains in mid-Shropshire and in its improved state may be thus described: a small, but wide and well-formed head with a good countenance, a dark grey and somewhat speckled face with a whitening tendency towards the ears, somewhat erect and thickset in the neck, short but symmetrically fine in the leg, broad in the shoulder, with very deep, full and well-developed brisket, rather long and particularly broad and level in the back, with ribs well covered and of a rounded tendency, low in the flank with exceedingly heavy hindquarters and a leg very thick, round and low. The average weight at sixteen months

would be about 20 to 22 lbs. per quarter and a good flock would average 6—8 lbs. fleece. Their original mountain-breeding has stamped them with a remarkable hardihood of constitution. They will thrive and do well on land of a sterile nature while in more generous districts the rapidity of their growth and their natural tendency to fatten are most extraordinary. Thickly depastured in the undulating districts of their native county they are ever a source of ready profit to their owners, who, beginning now to generally understand their superiority, tend them with the greatest skill, care and management. Hence this sheep, hitherto so little known, is now taking its proper place and the few real Shropshire breeders who have been so indefatigable and untiring in their efforts to produce a perfect animal have at length been rewarded by obtaining for them a name and first class position amongst the sheep of this country. They possess to a singular degree the quality and symmetry which have made the Southdown so famous, but are much larger in scale, earlier at maturity and heavier in their wool-cutting properties. They cannot compete with the Hampshire Downs for size, but when weighed against their larger antagonists the compact and well-developed points of the Shropshire render the apparent disparity in size amply compensated for by the actual weight, while in fineness of quality they are very far their superiors."

It will be remembered that at the 1857 Royal meeting the Hampshire Down No. 722 took the first special prize awarded to its class, and being eligible to compete also in the class "Short-woolled sheep other than Southdown," was shown against the Shropshires and with the others exhibited was defeated by Messrs. Adney and Meire, two well-known county breeders of Shropshire sheep, who carried off two firsts and one second prize from this class. Mr. Adney's first prize shearling ram was afterwards let for the season to the Earl of Aylesford for 65 guineas.

From these parent stocks has evolved the modern Shropshire, but there are no reliable records as to how the improvement in size, in uniformity of character, and in the value and weight of the fleece was effected. In the early days, some historians say the Southdown ram was introduced for this purpose, whilst others equally well qualified to express an opinion assert that the present uniformity of character and perfection of form is the result of selection from home-bred sheep of the best type. Speaking from personal knowledge far back into the last century, I am in a position to assert that no one who has achieved any success as a breeder or exhibitor has deviated from a line of pure breeding for the last sixty to seventy years.

Two pioneer breeders must be mentioned in any article relating to Shropshire sheep, viz., Mr. Samuel Meire, formerly of Berrington but latterly of Harley, and Mr. George Adney, of Harley. Both these breeders did much to improve the original stock, and for many years sold rams at remunerative prices, and there is no doubt that many of the best present-day flocks contain much of the Meire and Adney blood.

A sidelight on the foundation of Mr. Adney's famous flock is given in the *Farmers' Magazine* for 1859 in the report of live-stock which reads as follows:—"Mr. Adney, a famous breeder of Shropshire Downs, has generally a first-class letting; his flock was founded upwards of forty years ago upon the old black or grey faced sheep of the county, taking care to keep the dark-faced character and the fine and good wools. His first regular sales and lettings commenced in 1851 at good prices, and for the last four years his sales and lettings have averaged 18*l.* each, many of his best varying from 25 to 84 guineas each."

Mr. Edward Holland's flock, we understand, quite equals this in his sales and lettings.

This is verified by a report in a Shrewsbury paper giving an account of one of Mr. Adney's sales at Harley, when upwards of 800 gentlemen partook of luncheon well supplied with wine and other beverages. Competition was keen and large prices easily realised. Rams made from 15 to 95 guineas, ewes from 4 to 8 guineas, theaves from 3 to 5 guineas, ram lambs from 8 to 22 guineas, and ewe lambs 2 to 2½ guineas. Buyers attended from Australia, France, Ireland, and several English counties.

To those who can call to mind the Shropshire sheep of fifty to sixty years ago, the modern Shropshire bears no resemblance, save and except its natural hardihood and its aptitude to adapt itself to all soils and climes. The Shropshires which Messrs. Thomas Horton, George Adney, Samuel Meire, W. O. Foster, J. & E. Crane, Mrs. Baker, Messrs. John Coxon, Edward Holland, Thomas Mansell, Thomas Horley, John Stubbs, Sampson Byrd, Col. Dyott, Messrs. E. Thornton, and H. J. Sheldon successfully exhibited at the Royal Shows of 1853 to 1865, were for the most part brown with speckled faces and speckled legs, fine in the bone and devoid of wool, with bare bellies, and too often sickle hocked and crooked spines were the rule rather than the exception. The head of the male lacked masculine strength and character and carried little or no wool on the poll, and the sheep generally stood on much longer legs than the modern Shropshire. Little attention at this early date had been paid to the wool which was generally of a soft open character and greatly lacking that

density, length of staple and fineness which is now one of the leading attributes of the breed.

The present Shropshire is the result of great skill and judgment on the part of the breeder during the last sixty years. By degrees, nice soft black (not sooty) face and legs have supplanted the brown or speckled faced sheep, a straight spine has been obtained, the head of the male now possesses strength and character, and in both sexes the head is beautifully covered with wool of a valuable staple, which in addition to its charm against sore heads and flies, is a distinct improvement to the general appearance of the sheep. The wool is now the most valuable of all the short-woolled breeds when weight, denseness, and length and fineness of staple are taken into account, and it is this fact which has proved of great value when crossing the Shropshire ram on the merino or come-back ewe, the result being an ideal mutton sheep, whilst the wool loses little of its merino character for density and fineness.

The extensive foreign trade for the last 25-30 years and the demand for black faces and legs has done much to eliminate the brown face and legs, as it is found in practice that the black leg which the Shropshire always puts on the cross bred is a feature when they have to be marketed in London or elsewhere.

None of these great improvements in the contour and appearance of the present-day Shropshire have been obtained at the sacrifice of essential points, for the sheep of to-day is wider, deeper and fuller of flesh than the improved sheep of which we write, whilst its quality of wool and mutton have been greatly improved, and in addition the breed enjoys the reputation of being the hardiest, most prolific, and the earliest maturing of all the short-woolled varieties.

The spread of the Shropshire sheep is amongst the most remarkable features of the latter day livestock trade, brought about largely by the magnificent display of Shropshire sheep at the Royal Agricultural Show at Shrewsbury in 1884, when 875 sheep were exhibited as against 420 of all other breeds of sheep. No less than sixty competitors hailing from fifteen counties exhibited Shropshire sheep. This remarkable exhibit brought a quick response in a most extraordinary foreign demand for Shropshires, mainly from the United States and Canada, and this in its turn stimulated home breeding, and Shropshires became universally spread over Great Britain and Ireland, doing particularly well in the Emerald Isle where they have always been great favourites.

North of the Tweed Shropshires have also done well, and one of the leading flocks of the present day is that of Mr. T. A. Buttar some twelve miles from Perth.

SHROPSHIRE SHEEP EXPORTED.

	1913	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903
North America (U.S.A., Canada, and Newfoundland)	400	61	783	968	1,352	1,774	1,427	1,057	263	217	65
S. America (Buenos Aires, Uruguay, Monte Video, Chili, Peru, Brazil)	105	7	78	65	115	205	569	657	497	275	288
Australia, Tasmania, and New Zealand	17	8	7	2	8	11	212	82	153	66	331
South Africa (Algeria, Algao Bay, &c.)	120	2	26	11	9	21	45	52	54	27	46
Russia, Germany, France, Spain, Denmark, Sweden, Hungary, Jamaica, Finland, Greece, Portugal, &c.	43	38	39	25	122	35	61	54	75	118	53
Totals	685	116	883	1,071	1,601	2,046	2,314	1,902	1,032	708	788

The public appearance of the breed in the Royal Showyard at Gloucester in 1853 was the turning point with the Shropshire sheep, and encouraged breeders to use their best judgment in selection, and do all in their power to place their breed of sheep in the front rank. The reports available state that Shropshires were in great force amongst the other short-woolled sheep.

The prizes on this occasion were won by Mr. Thomas Horton and Mr. W. O. Foster, the other exhibitors including Mr. Samuel Meire, Castle Hill, Much Wenlock; Mr. Charles Randell, Chadbury, Evesham; Mr. George Haughton, Pitchford; Mr. B. Vaughan, Burway, Ludlow; the Earl of Aylesford, and Mr. James Hand and Mr. F. Lloyd, both of Ludlow, who exhibited respectively what were styled old Shropshire grey ewes and Shropshire Down ewes.

It should, however, be noted that at the Royal Show at Shrewsbury in 1845 several Shropshire rams of various ages were exhibited by Mr. John Davies, of Halford, Ludlow, and that Mr. Forester, of High Ercall, Salop, also exhibited a ram forty months old, bred by Mr. Salisbury, Dordon, near Atherstone.

Shropshires were next seen at the Great National Show in 1857 at Salisbury. Reporting on this Show in the *Farmers' Magazine* we have the following:—

“The Shropshire Downs have for several years stood high as a distinct breed, they are very prolific breeders, they fatten upon very moderate food, their form is in good proportion, and they yield good fleeces.

“In reporting upon the Gloucester meeting (1853) we said something like this, that the best sheep in the Show was Shropshire Down. From that time our eye has been upon



CELEBRITY (6).

Winner Royal Show Chester 1858 and Warwick 1851



ROYAL BRISTOL

1st prize Shearling Shropshire Ram 1913

Exhibitor and Breeder—A S BERRY, Shennstone Hall Litchfield

them, and, taking them in every point, we have yet to be convinced that they are to be surpassed by any other breed."

At Chester Royal Show in 1858 Messrs. J. & E. Crane with *Celebrity*, Mr. W. O. Foster, Mrs. Annie Baker with *Chester Billy* and Mr. G. Adney with *Patentee* and *Earl Salisbury* were successful competitors, and the Reports of Judges at the Royal and at local Shows in succeeding years continue to draw attention to the qualities of the breed, which was first recognised as distinct at the Warwick Meeting in 1859, when special classes were admitted into the R.A.S.E. prize list, in which 192 sheep competed. At the Leeds Meeting in 1861, the judges of Shropshires reported:—"Perhaps no description of sheep excited more interest in the Showyard than these. We find them in greater number than any other breed shown. It is impossible not to be struck with the appearance of these as a most useful rent-paying kind of animal. It would be well for breeders of these sheep to bear in mind that the qualities which have brought their sheep into notice are their aptitude to produce great weight and quality of both mutton and wool, combined with early maturity, while they will bear to be stocked more thickly than any other breed of equal weight. In addition to these good qualities, they are far more prolific than any other breed, and capital nurses."

About this period the principal breeders were Mr. Sampson Byrd, Mr. Henry Mathews, Mr. Pryce W. Bowen, Lord Wenlock, all of whom were successful exhibitors at the Royal, and other breeders showing at that time and not already mentioned, include Mr. J. H. Bradburne, Mr. R. H. Masfen, Mr. Joseph Meire, Mr. Maddox, Mr. John Preece, Mr. John Stubbs, Mr. C. R. Keeling, Colonel Dyott, Mr. William Grindle, Mr. J. B. Green, Mr. T. C. Whitmore, Mr. Edward Thornton, Mr. Tarte, Mr. Urwick, Mr. Thomas Marsh, Mr. Grewcock, Mr. Nurse, &c., &c.

To repeat what has been so well put forward by experts in the middle of the last century, no breed is so prolific and with ordinary management and care during the autumn and winter, at least 50 per cent. of doubles may be looked for, though in many instances I have known a much larger crop, and the increase when a Shropshire ram is put upon long-woolled ewes is, to quote Professor Coleman's own words, "much greater." In his work on the sheep of Great Britain he states that in the autumn he usually purchases forty Banffshire ewes, *i.e.* a description of Border Leicesters, with a slight Cheviot cross, and serves them with a Shropshire ram, either a shearling or a ram lamb. In 1872, thirty-six ewes produced seventy-eight lambs (216 $\frac{2}{3}$ per cent.) all sold fat. In a subsequent year, forty ewes produced eighty-two lambs, but owing to unfavourable causes ten were lost.

Shropshires are not only very prolific, but they are capital nurses, and I have frequently seen one of a triplet take a leading position at the annual exhibitions and ultimately prove a good sire, whilst the other two in due time formed part of the breeder's own flock. This shows that triplets from Shropshire ewes can be reared successfully.

In November, 1862, Mr. F. J. Fox issued the following report from the Parlington Tenant Farmers' Club :—

The Members of this Club having brought to a close their second experiment in summer grazing the following different breeds of shearling sheep—Shropshire, Leicester, Lincoln and North sheep—for the purpose of ascertaining with an equal or given quantity of food the class most profitably adapted to their locality, comply with the wishes of their friends in again publishing the result.

The lambs were wintered together and alike until May 20, clipped and brought to pasture, twelve of each class and upon about 2½ acres of seeds equally alike and without cake and the tabular statement speaks for itself :—

Class of sheep	Weight of twelve sheep on May 20, 1862, when brought to test		Total increase October 20, 1862		Total weight October 20, 1862	
	st	lb	st	lb.	st.	lb
Shropshire . . .	108	2	49	9	157	9
Leicester . . .	99	10	42	3	141	13
Lincoln . . .	119	6	38	10	158	2
North Sheep . . .	109	9	34	8	144	3

Mr. Fox adds that should reference be made to the first experiment, it will appear that the second trial verifies the first in showing the leading propensities of the Shropshire to gain weight.

Nowhere do Shropshires thrive better than in the humid climate of the Emerald Isle ; even in the Highlands of Scotland the Shropshire has been bred for a lengthened period with signal success and the Shropshire cross for fat lambs have for several years secured a large proportion of the prizes at the Highland and the Agricultural Society's annual shows.

The hardihood and longevity of the breed is testified to in *Saddle and Sirloin* (Mr. Dixon, p. 449), where he states that Mr. Samuel Meire's *Magnum Bonum* (first Royal Show at Salisbury, 1857) was used for eleven seasons and that his dam lived till she was twenty.

Again in 1896, the present writer saw a Shropshire ewe nineteen years old, hale and hearty, having reared thirty-three

lambs and during the whole of this time she had enjoyed absolute immunity from foot-rot.

To quote another instance: the dam of *Beaconsfield* 338, bred by Mr. T. Mansell and used successfully by Mr. Matthew Williams, was thirteen years old when this ram was born.

Again going back to 1860, it seems clear that at that period several first-class flocks existed. An expert, commenting on the display of Shropshires at Canterbury Royal Show, 1860, speaks in these words:—"Two wonderfully good rams were the heroes of the new class of Shropshires, and a very good class too. We honestly admit this grant has worked even thus early, far better than we expected. It has brought out men who did not care to send to Birmingham and Smithfield, and the world



Head (mounted) of *Worcester Patron*, winner of the First Prize for all aged at Worcester, 1863

never knew how many good flocks of Shropshires there were till now. Mr. Holland, the Member for Worcestershire, who has some good sheep of his own, gave the stiff price of 126*l.* for Mr. Byrd's first-prize ram, *Canterbury Patentee* 13. There were over 40 shearling rams and 20 others. The mere fact that such old established breeders as Mr. Orme Foster, Mr. Smith, of Sutton Maddock, and Mr. H. J. Sheldon, of Brailles, could get no nearer than a commendation will go to show how excellent was the entry, and how strong the competition."

The Farmers' Magazine again (1860) reiterates its opinion that the Shropshire is one of the most profitable and best of the modern breeds, and that it may be said to possess the most commendable points of the Southdown and Leicester breeds, being such a judicious commingling and blending of the two characters of the animals, in size and proportion, and in wool,

as to produce a kind second to none in every phase of their character. They are exceedingly prolific, possess handsome and large frames, come early to maturity, are very hardy, and yield a great weight, both of wool and mutton, both exceedingly good in quality. This breed is also extending itself over a large tract of country, and is fast becoming not only a very numerous but a very important breed of sheep.

It is also worthy of note that at the Essex Agricultural Show held at Witham in 1863, Mr. F. Smith, of West Hanningfield, won the first prize of 5*l.* for Shropshire Shearling rams in a class where Shropshires and Oxfords competed; that in a class of five ewes of any breed that have reared lambs, Mr. H. Moss was placed second with a pen of Shropshires, and that in a class for wool, Mr. F. Smith, who showed Shropshire wool, was only beaten by Mr. Charles Sturgeon's merino.

Referring to published reports of some of the principal shows commencing in 1856, we find Shropshires have even then been extensively exhibited and were rapidly coming into public favour. *The Farmer's Magazine* commenting on the Birmingham Fat Cattle Show in 1856, says the sheep show was not a large one, but with good pens of Shropshires as usual. Mr. S. C. Pilgrim, Burbage, Hinckley, near Leicester, won first prize and the silver medal for three fat wethers, the other prizewinners including the Earl of Aylesford and Mr. H. Smith, junr., whilst the Right Hon. Robert Curzon, of Hagley, near Rugeley, was commended.

The writer goes on to say he specially admired Mr. Henry Smith's first prize wethers exceeding twenty-two months for their splendid quality of meat, broad chines and full plants, wonderfully good loins and rumps.

In Ireland about the same period Shropshires were being exhibited at the meeting of the Royal Agricultural Society of Ireland and the Royal Dublin Society's Show by Mr. O. W. Hamilton, of Dunhoyme, Mr. Peter Broughton, of Kells, Mr. L. W. Lambart, Beau Parc, Mr. L. H. King Harmara and Lord Londonderry, Lt.-Col. Tottenham, Mr. C. H. Hamilton, Mr. Tuite and Mr. Atkinson.

Shropshires were first recognised by the London Smithfield Club in 1861, but numerically they were poorly represented, and all the prizes fell to Mr. Holland, of Dumbleton, Evesham, and Mr. W. O. Foster. They are described as undeniably fine animals with great expansive frames and all the evidence of vigour both in the touch and wool.

At the International Fat Stock Show held at Poissy, France, in the same year the report of the meeting commenting on the sheep classes says:—Save for one middling animal, Mr. Edward Holland's first prize pen of Shrops. (which also won the first

prize at the London Smithfield Show), formed the most even pen in the show. The five weighed eighty-two stones.

From 1857-63 several fresh names had been added to the successful list of breeders, including Lord Wenlock, Lord Dartmouth, Mr. G. A. May, Mr. J. Coxon, and Mr. Thomas Mansell, of Adcott, who won prizes at the Birmingham Christmas Show in 1863; and Mr. John Coxon, Mr. J. H. Sheldon and Mr. Thomas Horley, junr, who were in the Prize List at Warwick, 1859. Mr. Coxon sold his ram, *Juvenile 8th*, for £100 to go to Ireland.

It is only stating a truism to say that the breed is much valued and widely spread over the earth's surface, and it would be well to consider how it has gained this extraordinary popularity.

Favourable points.—150 to 175 lambs per 100 ewes is the usual average. A recent return from 11,666 ewes gave 168 lambs per 100 ewes.

The ewes good mothers.—Shropshire ewes are excellent nurses, and nature has endowed them with great milk-yielding properties.

Wool properties.—The Shropshire sheep cuts a heavy fleece of wool of the most marketable description, being of good staple, fine in texture and very dense, with small loss in scour and always readily saleable. Average weight of fleece for whole flock 7-8 lb. Individual fleeces much more. Shearling rams up to 18 lb. Shearling ewes up to 13 lb.

Adaptability to various soils and climes.—The most ubiquitous sheep extant, in every County in England the Shropshire sheep flourishes, also in the Highlands of Scotland, the humid climate of Ireland, and in the mountainous districts of Wales, frequently at an altitude of 1,000 ft. above the sea level.

The Shropshire also thrives and does well in the United States, Canada, South America, Russia, France, Germany, the Australian Colonies, South Africa, Jamaica, and the Falkland Isles, and indeed in every part of the world.

Early maturity.—If well cared for the wethers are fit for the butcher at 10 to 12 months old, and that on a moderate consumption of food. Shropshire Lambs mature very early as fat lambs, and the Shropshire cross for the fat lamb trade cannot be beaten. Throughout Australia, Tasmania, and New Zealand, the Shropshire ram is largely used for this special purpose with wonderful results.

Constitution and hardihood.—The breed is notoriously sound in constitution, and capable of withstanding extreme variations of heat and cold, and is one of the most hardy breeds in existence.

Quality of mutton.—The mutton of the Shropshire is rich in flavour, close in grain, juicy, and contains a large percentage of

lean meat, and commands the highest price in the London, Manchester, Liverpool and all the principal markets in Great Britain. Note the report of the "Block Test" in the *Live Stock Journal*, January, 3, 1913;—Shropshire lambs, first in class, bred and exhibited by Mr. Kenneth Milnes; age, about 9 months; average live weight, 156 lb.; average daily gain of live weight, 0.58 lb.; average weight of dressed carcass, 95 lb.; average weight of skin, 15 lb.; average weight of caul fat, 8 lb.; average percentage of dressed carcass to gross live weight, 61.06 lb.

These sheep dressed out very evenly, and cut full of lean, in fact they were ideal butcher's carcasses.

General purpose sheep.—Shropshire sheep have rapidly increased in favour in all parts of the world, and combining as they do the most desirable points (from a wool and mutton point of view) with the minimum of objectionable features, they have obtained an eminent and permanent position in the estimation of sheep-breeders all over the world. In fact, they meet all the requirements of the present day as a successful general purpose sheep and are therefore very profitable to farmers and graziers. The Shropshire has been very largely bred for crossing purpose to produce freezers with splendid results. The Shropshire-Merino cross produces a very fine sheep, and is preferred by many who have tried it to any other cross. The half-bred is a deep, square-set sheep, well covered with a fine close fleece, which gives a high percentage of clean, scoured wool, and commands a comparatively high price, whilst the sheep are hardy and fatten to nice handy weights at a very early age.

Probably one of the most valuable attributes Shropshire sheep possess is their power to sustain life on the poorest and scantiest of food and this has been forcibly brought to my mind by the comparatively small mortality amongst Shropshire flocks on Australian Stations during a prolonged drought as compared with Merinos. This hardy character is no doubt inherited from the original parent stock which largely roamed the hills and commons of Shropshire and Staffordshire.

It has never been the custom to judge Shropshire sheep by points, which in the writer's opinion is a method somewhat difficult of application, and more correct results will be obtained by the judge weighing the points for and against in his own mind and then giving his decision.

The best type of Shropshire should possess (particularly in the male), a well-developed head, with clean and striking expression of countenance, a muscular neck well set on good shoulders, the body symmetrical and deep, placed as squarely as possible on short strong legs, due regard being paid to grandeur

of style, the face and legs should be a nice soft black (not sooty), the head should be nicely covered, and the wool generally should be fine, of great density and length of staple.

The skin should be nice cherry colour and the belly and scrotum (in the males) should be well woolled.

Objections.—Horns in ram, speckled face, ears or legs, long heavy ears, thin open wool.

In all breeds there are more or less two types, and it is to a certain extent the case with Shropshire sheep. Some favour the short-legged, symmetrical, deep, lean-fleshed sheep, covered with a dense heavy fleece, while others prefer the longer-legged animal with more size, and open, soft wool, and possibly a little more bone. Personally I have always considered the Shropshire sheep as a medium-sized sheep of good quality with a robust constitution, maturing early at small cost, admirably adapted as a general purpose sheep. What I wrote some years ago I again repeat, and it fully expresses my views on medium *versus* large sheep. Some farmers prefer a big, coarse sheep on long legs, but I am quite convinced of this, that the most rent-paying class is the moderate-sized sheep of good quality, because the butchers can sell them the more readily and at better prices, and a greater weight per acre can be raised than where the larger and coarser sheep is resorted to, for 100 ewes in the former instance require as much land for their support as 130-140 well bred moderate sized ewes.

Men are too apt to look at the price per head of their teg sheep rather than the return per acre of mutton, and the better prices obtained for moderate-weighted sheep as compared with those which dress 70-90 lb.

To Shropshire breeders will belong the credit for all time of having founded the first Flock-Book ever published in this or any country. In the autumn of 1882 a meeting was called of the leading Shropshire breeders who formed themselves into the Shropshire Sheep-Breeders and Flock-Book Society. The first volume was published in 1883 and since then a volume has appeared annually, the last being No. 31.

The Flock-Book Society has done much to encourage breeders and disseminate knowledge abroad of the valuable attributes of the breed, and to this source alone much of the extraordinary demand of the last twenty-five years can be traced.

ALFRED MANSSELL.

College Hill,
Shrewsbury.


MOLE-DRAINING AND THE RENOVATION OF OLD PIPE DRAINS.

THE reasons why land owners, land agents, and farmers are now turning their attention to Mole-draining on heavy clay land are, it is believed, firstly, because a great many of the land drains put in forty or fifty years ago are now found to be incapable of properly freeing the land of water; and secondly, because the land drains put in 4 ft. deep with money borrowed under the Lands Improvement Acts, generally known amongst tenants as Government drains, have proved in many instances to be too deep for their purpose; and thirdly, owing to the fall in the capital value of heavy land and to the rise in price and scarcity both of skilled labour and of pipes, this class of land is not considered worth the expenditure of some 7*l.* per acre which would be about the cost of redraining it with pipes at the present time.

Owing to a recurrence of wet seasons after a cycle of dry seasons, owners and occupiers of heavy-land farms are once more being forced seriously to consider the question of land drainage. The farmer will often come to the agent and complain that he can grow nothing like a full crop on his arable fields partly because the water ruins his crops and partly because on account of the wet state of the land he cannot get on it at the proper time, and even if he could get on to the land he would be unable to get a proper tilth. How often in the last few years has one seen spring-sown crops substituted for winter-sown crops on heavy lands, with the consequent loss to the farmer, and more permanent crops such as both lucerne and sainfoin failing after two years. The reason is nearly always the same—the land was too wet. This is frequently also the case, unfortunately, with grass lands; land that used to carry sheep with safety will do so no longer, land that once could carry cattle in the winter now becomes poached, land that used to grow sweet good hay now tends to grow sour herbage and not much of that.

These are facts which cannot be disputed, but before looking for a cure it is necessary to ascertain the causes of the present state of affairs. The mouths of land drains of all sorts *must* be kept clear, that is to say, the ditches into which they discharge must be kept well below the mouth of the pipe. If the mouth gets blocked the water going down the drain cannot get a free outlet and consequently it backs up in the drain and becomes stagnant. Then the mud in the water is deposited in the pipe, which in a few years becomes quite choked. How

far back into the field this deposit occurs in the pipes depends on how much fall the drain has, and also whether or no the water has been able to find any other outlet. The main cause of drains becoming "worn out," as it is generally termed, is undoubtedly the blocking of the mouths. Too great stress cannot be laid on the necessity for shovelling out all ditches on clay soil every year to their original bottom. Following on this the main brook draining the district must also be kept clear. In the last cycle of dry seasons and in the bad times preceding it farmers in many places have certainly not kept their ditches clear; in the dry seasons they forgot the drains and in the bad times they did not want to spend the money necessary to keep the ditches clear. Constant supervision is necessary if land drains are to be kept in order. Often the fault lies in the ditch or watercourse of a neighbouring owner, and it should be remembered that an owner can be compelled to give a free run to another man's water by an application to the magistrates under section 14 of Vict. 10 and 11.

In examining a field that has recently shown pronounced symptoms of water-logging it is not uncommon on heavy lands to find several sorts of drains. There may be the old stone drains, *i.e.* a trench filled with upright stones or rubble stones; there may be the half-round horse-shoe pipe with no bottom, or the same with a separate tile bottom; there may be the -shaped pipe, and finally the round pipe, varying in diameter from 1 in. to 6 in. These drains are not infrequently at all sorts of depths. The new work may have been connected properly with older and deeper drains, or the new drains may be deeper than the old ones which may or may not have been properly connected with the new. Before any new drains are put into a field it is very necessary to find out if the field has been drained before. On enquiring from the old inhabitants and old tenants one is often told that the field has never been drained, but this information, especially on heavy clay land, frequently proves incorrect, as the writer has sometimes found out to his cost. The only way to find the old drains is to have all the ditches thoroughly cleaned out by a careful man who must go right down to the old bottom of the ditch, which often has not seen daylight for twenty years. It will be found that the man digging the ditch is far more likely to find the old drains if he gets 1s. for each drain-mouth that he discovers. If, however, no drains are found when the bottom is being dug, the sides should be carefully watched in wet weather for wet places, and the ground at these spots should be opened several yards back into the field. The result of this investigation will nearly always disclose old drains of one kind or another.

The question then arises whether the field must be completely redrained or whether the old drains can be made to work, *i.e.*, can the old mains be made serviceable? Very often if the old drain mouths are taken up, cleaned and re-laid for a few yards back the drain will work again. It is nearly always worth while to clear a ditch up to an old stone drain, as water so often finds its way in the wet times down them, but it is a waste of time and labour to renovate horse-shoe drains without a bottom, or with a loose bottom, and this also applies to 1 in. round pipes. Nor as a rule is it any good trying to renovate 2 in. pipes coming direct into the ditch, though sometimes a new main properly connected to the old 2 in. pipes may effect a cure.

Having found the mouth of the drain, if it be a 3 in. or a 4 in. or even a larger round pipe, it is advisable to open the main in several places for examination. If the pipe should not be too full of dirt, or if the dirt be not too hard, it can sometimes be cleaned out by means of 2 ft. bamboo drain rods, or other rods that will not come unfastened in the drain, or even by a wire. The rods must be worked from openings in the drain at about every 20 yards. They should be used from the mouth upwards when the drain is full of water; working the rods down with the water often causes a new stoppage as the displaced mud cannot get away. If the drain is too full of dirt to admit of its being easily cleaned out by rods, it is best abandoned unless it is within 2 ft. 6 in. of the surface when the pipes may be dug out, cleaned, and relaid at a less cost than carrying out entirely new work, but if the drain is deeper than 2 ft. 6 in. it will generally be found cheaper and more satisfactory to buy new pipes and make new drains.

So far no mention has been made of a very common cause of waterlogged land chiefly found on arable land, but often, too, on pasture land; on arable fields by continual ploughing and by the tread of the horses an impervious pan is formed just under the ploughed soil, through which the water can only very slowly, if at all, find its way. Another common cause is that the land has been drained too deep. Thousands of acres were drained 4 ft. deep about forty years ago with money borrowed from one of the societies formed under the Lands Improvement Acts. These drains had to be passed by an inspector from the Board of Agriculture and consequently have come to be known as Government drains. These so-called Government drains have in many instances quite failed to take away the surface water, partly because a pan has formed as mentioned above and partly because the surface water cannot get through the clay into the drains after the moved soil has become set over them. I have examined a

number of these Government drains on heavy clay land, both mains and minors, and have found them generally to be as clear and clean as the day they were put in, but showing very little signs of water running in them. It is evident that the method of rodding out drains as mentioned above is of no use, for as a rule the pipes are clear. Yet another cause is that owing to the old high ridges having been ploughed down and subsequently reformed and straightened after the drains were put in, the drains are buried too deep under the ridges.

On arable lands in both these cases, a good deal may in some instances be done when the field is being steam-cultivated by putting a few extra long tines in the cultivator with a view of piercing the pan. These tines should penetrate the soil at least 6 in., or better still 9 in., below the ordinary ones, and should be formed like a plough coulter. There will then be no danger of their bringing up the subsoil, and the piercing of the pan will often improve the drainage considerably.

In very many instances, however, nothing short of re-draining the field will be of any service, and this has become a very important question. Landlords are often very unwilling to incur the expense of pipe draining, on the grounds that they cannot get any return on their money. Owing to the rise in wages and to the scarcity of men capable of doing the work properly and also to the increased cost of pipes due to the closing of local brickyards, the cost of pipe drainage has gone up considerably. The cost now per acre will in many parts of England be found to be nearly 7*l.* for drains 7 yards apart 2 ft. 3 in. deep. The rent of the average heavy land I have in my mind is from 10*s.* to 18*s.* per acre. The lowest percentage that can safely be placed on capital expenditure on pipe draining would be 5½ to 6 per cent. after all the fees and costs of inspection have been paid on money borrowed from a society formed under the Lands Improvement Acts. 5½ per cent. on 7*l.* is rather more than 7*s.* 6*d.* per acre. I have suggested to many tenants who complain of waterlogged land that the landlord would drain the land if they paid 7*s.* 6*d.* an acre more rent but it is needless to say that they refused to do so because they could not see their way to afford an increase of 50 per cent. to 60 per cent. in their rent. In other words they considered on that class of land the yearly benefit derived was not commensurate with the increased rent, and it also follows that on the occasion of a sale the landlord would certainly not receive back the money spent on pipe draining. Consequently, therefore, on these waterlogged lands some method other than pipe draining must be adopted to get rid of the water, and the solution is, I believe, to be found in mole-draining.

Mole-draining is the making of a long hole 3 in. to 4 in. in diameter under the surface of the land at varying intervals and at depths from 3 ft. to 18 in., without digging and without pipes. It derives its name from its resemblance to a mole run.

The actual draining tool consists of a $3\frac{1}{2}$ in. round steel plug brought to a sharp point at one end and firmly secured to a blade of steel 8 in. wide, which is sharpened to a cutting edge on one side and secured to a suitable frame. A hole is dug to the required depth, the tool dropped into the ground and then drawn up the field. The result is that the earth is cut with the blade to the depth of the plug, and that a round hole is left by the plug in the clay with the sides quite smooth and compressed. The cut soon closes up, leaving the round hole in the clay.

Before giving any detailed description of the different tools and the method of working them, it would be advisable to discuss the conditions under which this method of draining may be effectual. I am not at all certain whether plug draining is not as old, or older, than pipe draining, at any rate I have found plug drains in fields which date back beyond the proverbial memory of the oldest inhabitant. The reason why it has been lost sight of in recent years is that pipe draining took its place as being more reliable and not so very much more expensive forty years ago. Very considerable advances have been made with mole-draining implements and engines in quite recent years, with the result that the cost has been materially decreased and the efficiency increased, while during the same time the cost of pipe draining has considerably increased.

Mole-draining is of no use unless the subsoil is clay. If there are patches of sand, gravel or stone, these drains will soon block up. The best results are obtained on a heavy clay soil when the field has a good fall, but this second condition is often absent. I have, however, satisfactorily drained fields nearly flat, but more mains are then required.

The first thing to be done when it is decided to mole-drain a field is to find out whether there are any old mains, and if so, where they run. They can be best seen in June or July when the land is under a white straw crop, and when found the next step is to ascertain whether they can be made serviceable. It is absolutely necessary to have proper pipe mains, for the system of running each mole drain direct to the ditch is not good. The mouths get filled up and lost, with the result that 2 or 3 acres at the bottom of the field stand in water. I have seen a field mole-drained satisfactorily without mains, when the field has been previously drained with tiles by taking the mole drains across the old pipe drains (Figs. 1 and 2). The

effect of this is that the mole drain lets the water through the pan and delivers it into the old pipe drains wherever the two types of drain cross. Even in these cases, however, I like to connect the mole drains to the main.

Mole-draining is usually done with steam power, and most engines pull 10 chains with a double rope, *i.e.*, a continuous rope working round a pulley on the mole plough. This double

FIG. 1

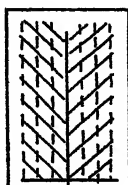
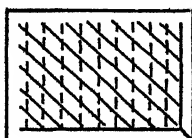


FIG. 2



*DOTTED LINES MOLE DRAINS,
PLAIN LINES OLD DEEP PIPE DRAINS.*

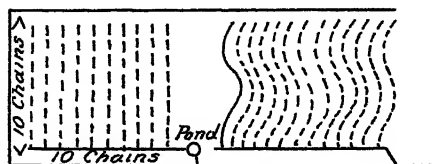
rope is very much better than a single rope, as the plough does its work without jerking. Ten chains is quite long enough for a mole drain in ordinary cases, and on flat fields this is too long, without an intercepting main. Lay out your mains accordingly, using 3 in. or 4 in. pipes according to the acreage to be drained. On very heavy clay it is a good plan to put a layer of bushes, preferably blackthorn, over the pipes before filling in the drains.

The mains should be all ready by the beginning of April. Holes should be dug at the main at the point where each minor will come, about 4 ft. long, and of the required depth, and one 2 in. pipe should be connected to the main at these spots when the main is being laid. These holes are called eyes, and are made when the main is being dug.

The procedure is then as follows:—One engine will go to one end of the field and the other to the other end. The work commences by dropping the mole plough into the first eyehole at the main, and then the engine begins hauling. The plough will travel nearly as fast as a man can walk. A man sits or stands on it to steer it, so that it is perfectly easy to follow crooked or S shaped lands or any ordinary curve (Fig. 3). The head drainer on the estate, or some other responsible person, should follow the plough to be ready to put in a peg at any point, where the plough is seen to jump. The jumping means

that the mole has hit a stone, and these places should be dug out and a few 2 in. pipes put in to make the drain good. In some clays there are no stones and in others there are a good many. At the top end of the field the man on the plough winds it up so that it is gradually drawn out of the ground in the course of 5 to 6 yards.

FIG. 3



The other engine meanwhile having changed its position to the next eye pulls back the mole plough over the surface of the ground. The plough is dropped into the next eye, and so the work proceeds. The drainers follow behind to put the 2 in. pipes into the eyeholes to connect the mole drains to the mains and then to fill in.

If (as in Fig. 4) an extra main has to be put into a hollow place this main should be put in after the mole-draining has been finished, the mole drains on either side being connected to it with pipes. Gores can be made by using a mole drain as a main (Fig. 4).

FIG. 4

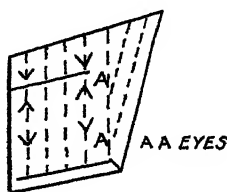
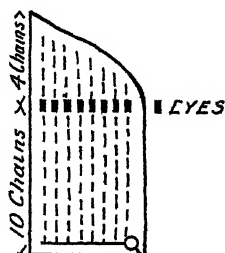


FIG. 5

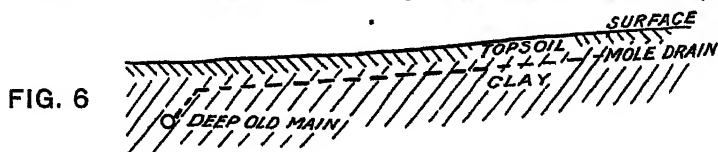


The distance the mole drains are to be apart is governed as a rule by the furrows if these are not too far apart, but where there are no furrows, then the drains should be from 5 yards to 9 yards apart, 7 yards being about the average. The depths of the drains are to a great extent governed by the soil. On very retentive soil 18 in. to 21 in. is deep enough. On rather lighter clay 24 in. to 27 in. deep will be found not too much. 18 in. deep is as a rule too near the surface to withstand the weight of ploughing engines, timber carriages, &c., but often it is advisable to drain at 18 in. so as not to disturb the old pipe drains.

Mole drains must follow the natural fall of the surface of the ground (Fig. 6), and they must also follow either the furrow or the ridge (Fig. 7). The reason of this, is, of course, that the drain itself will follow the surface of the land exactly, and a drain cut across the ridge and furrow would reproduce each rise and fall, which would obviously be fatal (Fig. 8).

In Fig. 5 the method of dealing with mole drains over 10 chains long is indicated, new eyes being dug and the two mole drains connected by means of 2 in. pipes in the eyes.

Mole draining with engines can only be done when the surface is hard enough to carry the engines, and when the subsoil is wet enough to allow the mole plough to work easily, and to allow of the glazing of the drain. These conditions are usually to be found at the end of April and beginning of May,



and only very rarely indeed in the autumn. In April and May the winter sown crops are well up, and generally the spring crop is sown. The ideal crop for mole-draining on is, of course, seeds, or stubble not yet ploughed, but in actual practice very little damage is done whatever the crop may be. I have drained a field with winter beans 15 in. to 18 in. high with hardly any damage, and I have constantly drained wheat fields. A dead fallow field can be drained if the clods are not too big. In all cases where mole-draining is to be done, if the surface is dry enough for the engines it is not advisable to defer the draining merely on account of possible damage to the crop.

If the depth is not more than 2 ft. 3 in. and the pull 9 or 10 chains, then about fifteen acres should be drained in a day provided that everything is ready for the work—*i.e.*, mains, eyes, coal, water, &c.

As to drain mouths : Built-up expensive blue brick mouths fall sooner or later into the ditch, or are left as islands. Dry

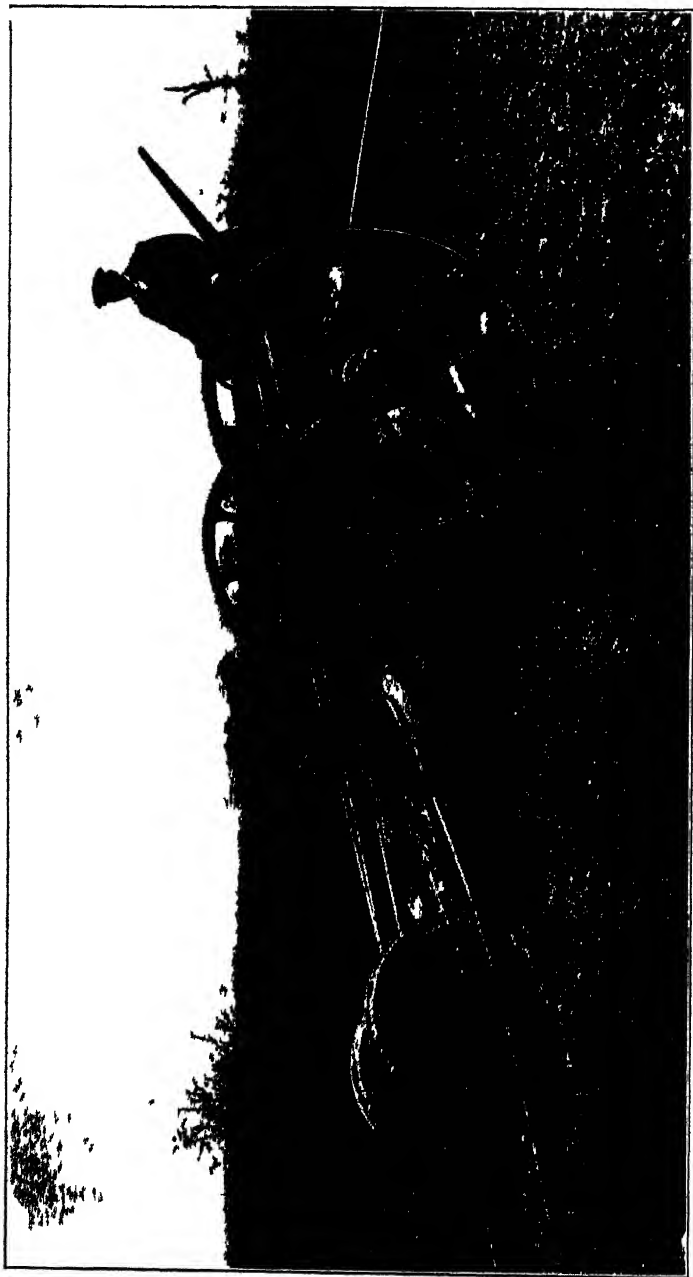


FIG 9—Mole Plough out of the ground

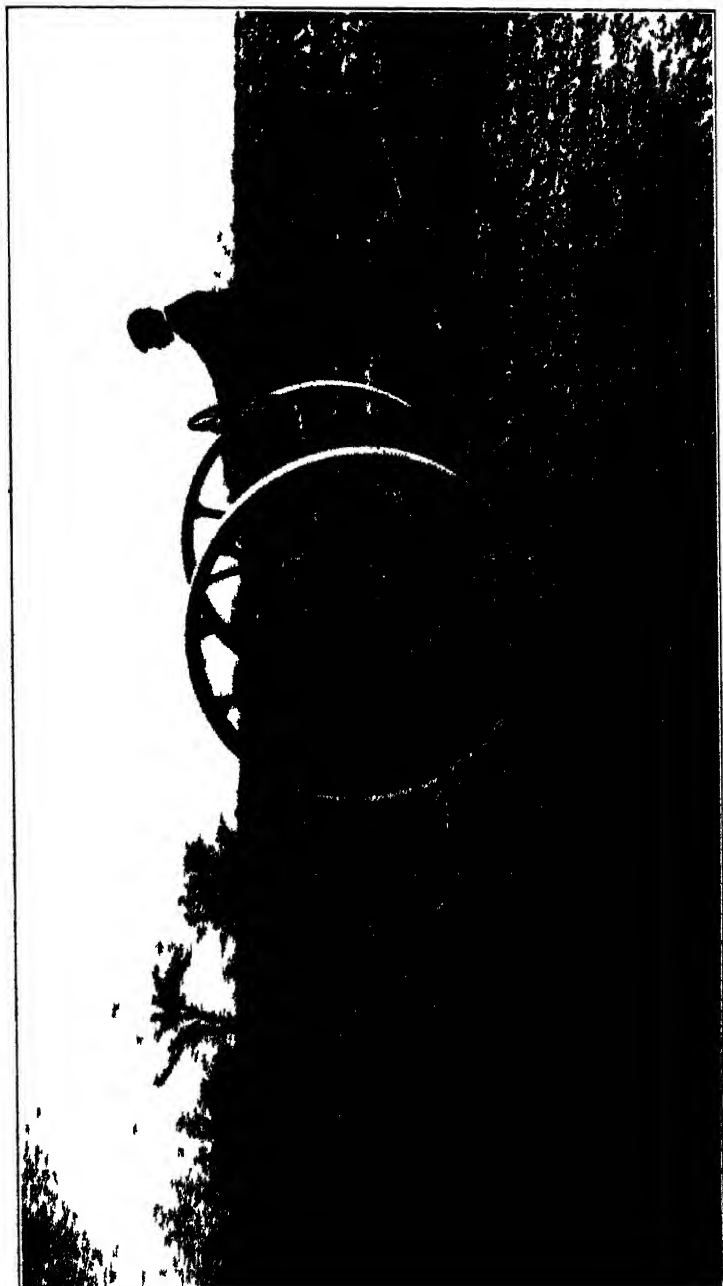


FIG. 10.—Mole Plough ready to start

stone walls built with large flat stones on the same batter as the ditch appear to last longer, but the problem is to find a cheap and effectual mouth where no local stone is available. I have used three 2 ft. glazed socketted pipes cemented together for the last 6 ft. of main with very good results. At first, framed oak posts were put at the mouth with iron rods to form a grating to prevent rabbits going into the drain, but a cheaper way is to turn the socket pipes the wrong way, so that the socket, and not the spigot, is in the ditch. Into the socket two rods of iron are cemented so as to form a grate, and no posts are then needed. This latter method is the best for pipe drains, but for pipe mains taking mole drains it is advisable to be able to move the grating so that stones and gravel can be removed. Whenever a drain mouth is put into a ditch a large flat stone should without fail be put at the bottom of the ditch to take the splash of the water. This stone also serves another important purpose, namely, to show clearly to what depth the ditch should be cleaned out.

The illustrations on pp. 84 and 85 show an up-to-date mole plough for use with engines, the first, out of the ground, the second, dropped into an eye ready to start work. The front wheels are 2 ft. 3 in. high and 2 ft. apart: the back wheels are 5 ft. 6 in. high and 5 ft. apart; the distance between front and back wheels is 10 ft. The beam is of iron, and where it runs on the ground is 9 in. wide and 6 ft. long.

The mole is 2 ft. long and $3\frac{1}{2}$ in. in diameter, and it is brought to a chisel point. The bar holding the mole is 8 in. by 1 in., and is capable of dropping, if required, 3 ft. into the ground. The stay to the mole is 3 in. by $\frac{1}{2}$ in.

The gear for winding the plough out of the ground is now fixed behind the back wheels, and, as already described, the steersman gets down and winds the plough out before the engine stops. The trailer behind the mole I personally object to, as I have found it does not work very well, and I always have it removed.

Generally speaking, about half a chain all round the field is not drained. The following table gives the approximate cost per acre for drains at different distances apart:—

Yards apart of Drains	Num- ber of Chains to the Acre	Cost of Steam Work per Chain	Total Cost of Steam Work	Cost of Coal	Total for Mole Drains only	Renovat- ing Old Mains, Eyes, and Super- vision	New Mains, Eyes, and Super- vision	Total Cost with Old Mains	Total Cost with New Mains
		<i>d</i>	<i>s d</i>	<i>s d</i>	<i>s d</i>	<i>s d</i>	<i>s d</i>	<i>s d.</i>	<i>s d</i>
7	25	4	8 4	1 0	9 4	2 6	10 0	11 10	19 4
9	20	4	6 8	0 11	7 7	2 6	9 6	10 1	17 1
11	16	4	5 4	0 9	6 1	2 0	9 0	8 1	15 1
13	11	4	3 10	0 8	4 6	2 0	9 0	6 6	13 6

It is assumed that the farmer will do the hauling free of charge.

The cheapest field to drain would be one ten chains wide with an even fall and as long as you like, in which case a chain of main will drain an acre. The cost of mole-draining a field will vary according as to whether the old mains can be utilized or not, and as to whether the shape and fall of the field necessitates extra mains. Mole drains are measured from the eye to the spot where the mole begins to be lifted up.

I have taken the cost of mole-draining by steam engines because I have no figures as to the cost of the old mole draining which was done with a mole plough drawn by bullocks. A farmer tells me that on grass with a capstan fixed at one end of a field worked with two or three horses he can drain with a mole plough about eighty chains per day, 12 in. to 14 in. deep, having first ploughed a furrow 6 in. deep. A well-known land owner informs me that with his plough, pulled direct by nine horses, ten acres a day 18 in. to 20 in. deep could be drained, and he adds that the draining was carried out in winter at odd times. Both of these methods seem cheaper than steam, but I am inclined to think that the work is not so good as when done with a heavy mole plough pulled without jerking by a double rope working round a wheel. When the mole plough is drawn direct by bullocks or horses the land may become poached and any growing crops would inevitably be damaged.

Such ploughs are usually pulled by nine horses, three abreast, and they consist of a wooden beam $7\frac{1}{2}$ in. by 7 in. and 6 ft. long, which runs on the ground, and on the front end of it is a coulter 11 in. deep. The mole itself is 14 in. long, 3 in. in diameter, and tapered; it is fastened on to a cutting bar, 3 in. by 1 in., arranged so as to be adjustable to depths varying from 1 ft. 9 in. to 12 in. It has ordinary plough handles.

The question will be asked how long will mole-draining last. It is not easy to generalise, for I know grass fields drained about thirty years ago which are still quite dry, whilst on the other hand I know fields drained ten years ago which are now quite waterlogged. The answer to the question depends on whether the work was done well and with judgment, and whether the subsoil was suitable. Given these conditions, and they are not difficult to obtain on heavy, wet lands, mole-draining should be safe for fifteen years if not for twenty-five years.

It will be seen therefore at a cost of sometimes more and sometimes less than one ploughing the water can be drained off a field. Surely mole-draining is worthy of far greater

attention. The farmer will not only ensure his crops from damage by surface water, but will save every year at least one ploughing, besides being able in most seasons to get on his land at the proper time and have a chance to put his seed in on a good tilth.

Arable land has been chiefly mentioned because the results are more easily seen and appreciated on arable than on grass land; but as great or greater results can be obtained on grass lands. Grass farms have been absolutely altered in character by mole-draining, and have been made worth more than double the old rent.

Another very important advantage of draining is the fact that it can be utilised to feed ponds. It is therefore always advisable to arrange the main so that it discharges into a pond where possible (Fig. 3). Mole drains will as a rule run quicker than pipe drains, and thus a heavy thunder-storm will often fill a pond quite full through their agency.

One difficulty in mole-draining lies in the fact that if a very dry season follows the spring in which the work is carried out, the cut made by the coulter does not close up, in fact, it may get larger, and then the earth crumbles and falls into the drain and so blocks it up. In order to obviate this, the experiment was tried on a grass field of first turning a furrow with the plough with the idea of turning it back over the crack, but it was found that the mole plough drawn with engines would not work with the turf left close beside it, and so the furrow-slice had to be replaced in its original position before the work could be proceeded with. It is always advisable to pass a heavy roller over the drains on grass land as soon as the draining is finished. Next spring I shall have a small cutting blade fixed on each side of the plough beam behind the main bar, so shaped as to close up the crack above the drains.

Speaking from a land agent's point of view I have found tenants quite ready to pay the bill for the steam work and coal, besides doing all the necessary hauling, if the landlord will find the pipes and put the mains and mouths in order, or if he will put in any new mains that may be required. The landlord should also have an experienced man to superintend the draining.

In order to comply with the Agricultural Holdings Act, the cost paid by the tenant is reckoned out and the compensation for this is agreed either on a three or on a five years' basis, *i.e.*, if a tenant is on the five years' basis and he leaves at the end of the third year he would receive as compensation two-fifths of the money paid by him. These are favourable terms, for the tenant generally obtains in the first year heavier crops which more than repay the whole of his outlay. I

venture to think there is not the slightest doubt that it would well pay a tenant to mole drain heavy land, even if the landlord did not bear any of the cost, but the question of future compensation would probably lead to trouble, especially if the land after draining should prove to be worth a greatly increased rent.

I hope these notes may draw the attention of land owners and farmers to this simple and cheap method of considerably improving wet, heavy land whether arable or pasture, for it is well worthy of their consideration. I am indebted to Messrs. John Fowler & Co. of Leeds, the makers, for the illustrations of mole ploughs, and to Messrs. Briggs & Sons, of Stamford, who have carried out a great deal of mole draining for me, for various particulars.

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CONTAGIOUS OR EPIZOOTIC ABORTION IN COWS.

THE purpose of this article is to describe in language that may easily be understood by a layman the present state of knowledge with regard to abortion in the bovine species. It hardly requires to be stated that the failure of cows to carry their calves to full term may be the result of various untoward circumstances, including all those that seriously injure or threaten the life of the pregnant animal herself. Thus, abortion may be caused by mechanical injury, severe diseases of various kinds, poisoning, starvation, and possibly severe mental shock or fright. Although it is admitted that these must be reckoned as possible, and occasional actual, causes of abortion, they are, even collectively, of little or no practical importance, from the simple fact that in the immense majority of cases of abortion in cows there is strong evidence that none of them has been in operation. What these suggested causes particularly fail to explain is the occurrence of multiple cases of abortion in the same herd in one or several successive seasons. Very slight reflection regarding the various diseases of man and animals which have this character of affecting considerable numbers of individuals living in more or less close association, will show that the great majority of them are contagious or infectious, by which is meant that the cause of the illness is a living organism which multiplies in the

bodies of infected animals and by some means or another is passed on from the diseased to the healthy individuals. It is therefore not surprising that contagion should long ago have been suggested as the probable cause of multiple cases of abortion among cows. The idea is more than a century old, but what is surprising is that in spite of its obvious reasonableness it is only in quite recent times that it has found anything like general acceptance. In what follows it will be shown that the occurrence of multiple cases of abortion in a herd is nearly always due to the spread of a particular contagious disease among the cows, meaning by the word "particular" that the disease is caused by a definite species of organism which can be recognised and identified by a number of special features or characteristics. It may be observed that in the preceding sentence it is not asserted that this organism is responsible for all multiple cases, or outbreaks, of abortion in the same herd, for it is obvious that some of the earlier mentioned causes may occasionally operate simultaneously on a considerable number of pregnant animals and bring about abortion. Moreover, it must be admitted as conceivable that other microbes than the one referred to above may be capable of causing abortion in cows, and that there might thus be two or more different kinds of contagious abortion in these animals. The writer, however, is in possession of evidence which proves that beside the special organism which in the remainder of this article will be called the abortion bacillus all other causes of abortion among cows sink into insignificance.

The abortion bacillus.—The accompanying figure (Fig. 1) may serve to give the reader a fairly correct idea of the shape of abortion bacilli, and also of their size, if it is remembered that they are in reality two thousand times smaller than they here appear on the paper. In cases of contagious abortion, the bacilli are always present in large numbers in the diseased womb, and in the discharges and afterbirth. A peculiar feature of the bacilli is that they are often collected together into large clusters or clumps, one of which may contain hundreds of individual organisms.

There is no great difficulty in inducing the bacilli to grow outside the body under entirely artificial conditions in test tubes or flasks containing various nutritive materials of which the basis is meat extract. It does not appear to be necessary to describe here in any detail the various appearances presented by artificial crops or cultures of the abortion bacilli, but one of its so-called cultural characteristics may be described because it is of value for the identification of the organism. The medium or nutritive substance in which this peculiar appearance is exhibited is one which is transparent and solid at temperatures

considerably above that of the body. At the boiling temperature it becomes liquid, and it "sets" again when the temperature falls. It is obvious that if one mixes up a large number of abortion bacilli with such liquefied medium in a test tube and then allows the medium to become solid again, the different bacilli will be imprisoned at so many different points in the transparent substance, just as minute particles might be embedded in calf's-foot jelly. The individual bacilli are, of course, quite invisible to the naked eye, but when they multiply each discloses its position by building up a visible speck of growth, just as a spore of common mould does when it grows on a piece of bread. Many different species of bacteria can be grown in this way, and as a rule when they do the specks of growth, or "colonies," as they are called, develop more or less regularly throughout the whole of the medium. Generally,

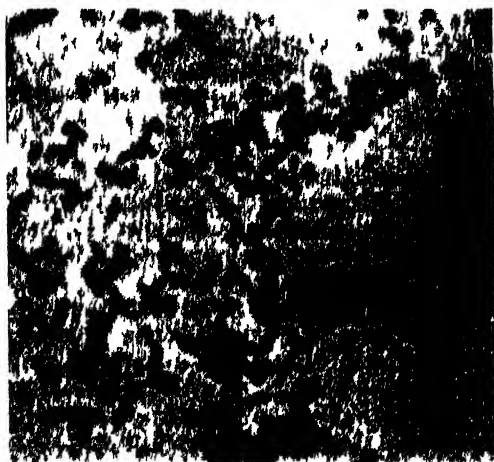


FIG 1.—Abortion bacilli (magnification 2,000).

however, the growths of abortion bacillus obtained in this medium have the appearance shown in the annexed figure (Fig. 2), from which it will be seen that the spots or colonies do not develop everywhere, but are confined to a definite narrow stratum which lies a short distance beneath the surface. The result is remarkable in view of the fact that what may be called the "seed bacilli" were scattered throughout the whole of the medium. Apparently the conditions favourable for their multiplication are present only at a slight distance from the surface, a fact which was interpreted by Bang as indicating that oxygen in the full strength in which it occurs in the

atmosphere exerts a restraining influence on the bacilli. Some oxygen, however, is required for their growth, and the necessary amount is obtained at a little distance beneath the surface by diffusion of the gas into the medium, with the result that the bacilli there begin to multiply. Beneath that depth the oxygen fails to penetrate and growth is therefore prevented.

Although this mode of growth is of value for enabling one to distinguish the abortion bacillus from many other organisms, it is presented by a few other bacteria. Moreover, it has been found that abortion bacilli can be induced to grow quite readily on the surface of artificial media where they are freely exposed to the atmospheric oxygen.



FIG. 2.—Artificial culture of abortion bacilli in serum-gelatin-agar. The growth is confined to the dark stratum extending across the tube a short distance below the surface of the medium.

Susceptibility of different animals to infection.—Putting aside one or two doubtful observations, natural cases of contagious abortion have hitherto been encountered in the bovine species only. Outbreaks of abortion are not uncommon among ewes and mares, but no outbreak among these animals has been definitely proved to have been caused by the abortion bacillus. Indeed, one may go farther and say that the particular disease which is the common cause of abortion in cows seldom or never attacks any of the other domesticated animals.

It is remarkable, however, that the abortion bacillus is capable of causing abortion in a large number of animals—a fact which has been ascertained by experiment, and which appears to be out of harmony with experience. Pregnant animals belonging to all the common domesticated species have been successfully infected by experiment with the abortion bacillus, as have also the rabbit and guinea-pig. Indeed no species of mammal which has hitherto been tested by experiment has been found to be immune against this organism. It is, however not necessary on this account to doubt the opinion stated above, viz., that other animals than those belonging to the bovine species seldom or never contract the disease by contagion or infection, for there are many other well-known instances of marked discrepancy between the disease producing power of an organism as determined by experiment and the incidence of the disease which it causes naturally. For example, it is very easy to infect sheep experimentally with tuberculosis, but

natural cases of the disease are very rarely observed in these animals.

It was until recently very generally believed that contagious abortion was exclusively a disease of pregnant cows, although, as was first pointed out by Bang, some local inflammation follows the injection of large numbers of the bacilli under the skin in male animals as well as in females. It has, however, now to be recognised that the abortion bacillus may infect bovine animals of either sex and any age. This is a fact which could probably never have been determined by observation, owing to the circumstance that unless the animal happens to be pregnant infection with the abortion bacillus is not manifested by any symptom of disturbance or illness. The fact that the disease which is now being considered is not confined to pregnant cows has been ascertained by means of the agglutination test, and it is important to note that what has been proved is not merely that cattle of either sex and any age *can be* experimentally infected, but that non-pregnant females and bulls do actually contract the disease naturally, viz., by contagion or infection.

Source of the bacilli which cause infection.—It is obviously important to know from what source the bacilli which infect previously healthy animals come, and the first point to be considered in that connection is whether abortion bacilli can grow in water, soil, &c., or whether they multiply only in the bodies of infected animals. In the first of these alternatives a case of abortion might arise almost anywhere, and quite independently of any antecedent case of the disease. It is, of course, impossible to prove that abortion bacilli never multiply outside the bodies of infected animals, but it may safely be said that there is no evidence that they do so in natural circumstances, and that there is no experience which really contradicts the view that the disease with which we are dealing is a purely contagious or infectious one.

The question of the source of the bacilli which cause infection is therefore narrowed down to a consideration of the channels by which the bacilli leave the body of a diseased animal. It is a matter of certainty that the greatest number of bacilli escape from the infected animal at the time of abortion or parturition and during the next following few days, and it has very generally been assumed that the disease is mainly spread by the bacilli thus voided. It must be admitted, however, that there is at present little or no real knowledge regarding the importance of other channels by which bacilli might escape from an infected animal. They are apparently sometimes passed out with the milk, but nothing is known as to their possible presence in fæces or

urine. It is also uncertain, and difficult to determine, whether the bacilli commonly escape directly in any numbers from the genital passages before abortion or parturition, or for how long they generally continue to escape after either of these events. In these circumstances, one must regard every infected animal—of either sex, and whether pregnant or not—as a potential disseminator of bacilli.

Methods of infection.—Experiments have proved that pregnant animals can be infected in a variety of ways. The method which appears to be the most effective for causing actual abortion is the injection of bacilli into one of the veins, but abortion may also follow the experimental introduction of bacilli under the skin or into the genital passages, or their administration by the mouth. But the important question under this head is not the possible experimental methods of infecting animals, but the way by which the bacilli enter the bodies of animals when the disease is spreading naturally in a herd. Until quite recently the generally accepted view was that the bacilli, as a rule, if not always, entered by way of the genital passages. Opportunity for such admission was supposed to be provided while the animals were lying down in the cowshed, the vulva then coming into contact with materials containing the bacilli in the channel for the urine and fæces. It cannot be said that this view ever had much in its favour except the fact that various experimenters had found that animals could be experimentally infected by the direct introduction of bacilli into the vagina, and the further fact that the vagina furnishes the most direct route to the womb, which is the main seat of the disease. In the light of recent researches it appears actually doubtful whether cows ever become infected in consequence of such casual or accidental admission of the bacilli into the genital passages. As soon as experiments had shown that animals could be infected by the mouth this had to be regarded as a highly probable natural method of infection, and a consideration of all the circumstances leaves little or no room for doubt that it is the way in which the disease usually spreads in a herd. It is quite obvious that, given the existence of abortion bacilli in a cowshed, these are much more likely to be taken in by healthy animals with their food than to find their way directly into the genital passages. Without denying the occasional occurrence of infection in the last-mentioned way, it appears to be safe to say that the disease is far more frequently contracted by the ingestion of bacilli in food or water. And if this opinion is justified with regard to the dissemination of the disease in cowsheds, there are still stronger reasons for holding that direct infection of the genital passages cannot occur with any frequency among animals at grass.

The rôle of the bull in the transmission of the disease has next to be considered. Many persons of experience believe that bulls play an important part in spreading contagious abortion from cow to cow, their opinion being that by successive acts of copulation the abortion bacilli are mechanically transferred from the genital passages of diseased to those of healthy cows. It is impossible to deny that this is one of the natural methods of infection, and facts which have only recently been proved will probably be held by many to constitute further strong evidence in support of the view that the bull is a serious factor in the spread of the disease. The facts here referred to are (1) that bulls can be experimentally infected by introducing abortion bacilli into the sheath, and (2) that in infected herds bulls can sometimes be proved to have contracted the disease. The proof of infection in both these cases has been furnished by the agglutination test. It would, however, be easy to exaggerate the importance of these discoveries, for it does not follow from the mere fact that a bull has become infected that he would be capable of transmitting the disease in the act of service, nor does it follow that he himself became infected in that way, since the disease has been detected in young animals of both sexes, which had never copulated. It must be left to future observation and experiments to furnish more conclusive evidence than exists at present regarding the relative frequency of infection from the bull, but it seems probable that this method has far less importance than infection by the mouth.

The results of infection with abortion bacilli.—The act of abortion or premature labour is only a symptom—and an inconstant one—of the disease which is caused by the abortion bacillus. The cause of the abortion is a diseased condition of the womb, and the membranes which surround the foetus, and beyond this the post-mortem examination of an infected pregnant cow never reveals anything abnormal. The absence of disease from the other internal organs explains the fact that in cases of contagious abortion the animal's general health, at least up to the time of abortion, appears quite unaffected. After the act of abortion the cow's health may suffer, but that is practically always attributable to retention of part of the cleansing, which must be regarded as a complication of the original disease. Contagious abortion has been defined as a specific uterine catarrh, and no doubt that is accurate for the disease as it affects pregnant animals. Obviously, however, the definition is not wide enough to embrace all the cases, since male animals can contract the disease, and young female animals when infected do not develop any catarrh of the womb. Indeed, in these animals the post-mortem examination

reveals no evidence of disease, the existence of which can only be proved by the agglutination or complement tests. It is of interest to notice also in this connection that although at the post-mortem examination of infected pregnant cows abortion bacilli have never been found external to the womb, it is obvious that they must in many if not in all cases exist in other parts of the body at a certain stage of the disease, for, to account for the fact that cows can be infected by the mouth, one must assume that the bacilli find their way into the bloodstream, and by that means reach the uterus. The known facts also make it practically certain that an actual multiplication of the bacilli must take place either in the blood or in other organs besides the uterus.

It has already been stated that abortion is not a constant result of infection even in pregnant cows, and the fact must be emphasised here. That many infected cows carry their calves to full term has long been suspected, but the fact has now been proved by the employment of the agglutination test in large numbers of infected herds. In such circumstances one often finds that cows which have recently calved at full term are condemned by the test, or that pregnant cows condemned by the test do not afterwards abort. There is, of course, nothing remarkable in this fact, for a considerable amount of structural disease is required in order to provoke the womb to expel its contents prematurely, and the normal period of parturition may arrive before that point has been reached. The reader may here be warned not to jump to an explanation of the fact which may appear to him much simpler, namely, that the agglutination test is in error when it condemns a cow that carries her calf to full term. Judgment with regard to that point may be suspended until the evidence bearing on the reliability of the agglutination test has been dealt with.

Diagnosis.—When a cow has just aborted there are various ways in which one may attempt to determine whether the act has been caused by infection with the abortion bacillus or has been due to some other cause.

Some guidance in the matter may be obtainable by considering the condition of the cow, the ease or difficulty with which the foetus has been expelled, and the appearance of the latter and its membranes. Thus, absence of any indication of illness on the part of the cow and almost effortless expulsion of the foetus are points in favour of the case being one of contagious abortion. It is, however, not necessary to discuss the value of such evidence at any length, for nothing is more certain than that there are many cases in which the cause of the abortion cannot be determined in that way.

A bacteriological examination of the matter which comes away with the foetus, or of the latter and its membranes, will in nearly all cases enable an expert to diagnose a case of contagious abortion, but this applies only to the first day or two after abortion. Within less than a week diagnosis in this way becomes impossible.

A material analogous to tuberculin, and termed "abartin," has been employed for diagnosis, but it cannot be said that there is sufficient evidence to warrant an opinion as to its actual value.

There are, however, two recently introduced tests for contagious abortion which have been proved to be remarkably trustworthy, named, respectively, the complement and the agglutination test. These appear to give closely concordant results, but, inasmuch as the first is much more complicated and difficult to carry out, and no more accurate than the second, only the latter will be here described.

The agglutination test depends upon the fact that when an animal becomes infected with contagious abortion a substance which has a special affinity for and exerts a peculiar action on abortion bacilli appears in the blood. This substance is termed "agglutinin." When blood serum in which this agglutinin is present is added to an emulsion or suspension of abortion bacilli in water, it acts on these in such a way as to cause them to collect together in clusters or clumps, and this clumping or agglutination of the bacilli can be observed under the microscope. It can, however, also be made manifest to the naked eye, because the clumps which are thus formed in a suspension of abortion bacilli tend to fall more rapidly under gravitation than the single unagglutinated bacilli do. Hence, when marked agglutination occurs in a test-tube, the original slightly hazy liquid gradually becomes quite clear and transparent, while the clumps of bacilli at the same time settle to the bottom of the tube.

Briefly stated, the test is carried out as follows :—A sufficient quantity of abortion bacilli obtained from a pure artificial culture is added to water in such proportion as to make the mixture slightly hazy when a test tube containing it is held up to the light. Care must be taken that this suspension does not contain any coarse clumps of bacilli, but is for the most part made up of single bacilli suspended in the liquid. Measured small quantities of this suspension are then poured into a series of small test tubes and to each of these a measured quantity of serum from the suspected animal is added, the proportion of serum varying in the different tubes. In general one employs at least three such tubes, which respectively contain the serum in the proportion of—

1 in 50 of emulsion,
 1 in 100 of emulsion,
 1 in 200 of emulsion.

In carrying out the test with any suspected serum it is necessary to make at the same time two similar sets of tubes, one containing serum from an animal which is known to have been infected with contagious abortion, and one with serum

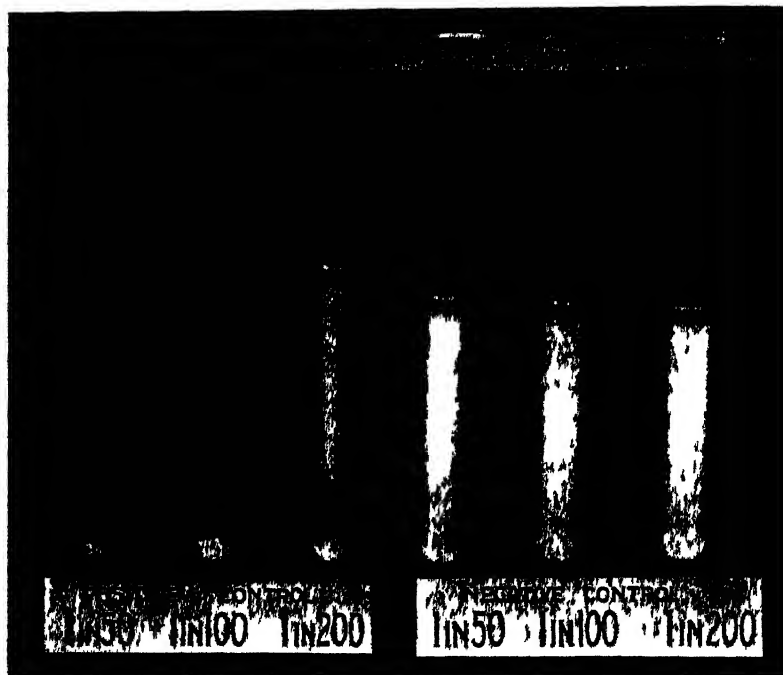


FIG 3—The three right hand tubes marked "Negative Control" each contain serum from a healthy cow, and in each case the emulsion of abortion bacilli retains its original cloudy appearance.

The three tubes marked "Positive Control" each contain serum from a cow known to be affected with contagious abortion. The tube nearest the left shows complete agglutination, the bacilli have fallen to the bottom and left the liquid quite clear. In the middle tube the agglutination has been less complete, and in the one to the right it is only recognisable.

The figures beneath the tubes indicate the proportion of serum present in each.

from an animal which is known to be free from contagious abortion. One also includes in the test a single tube of bacterial emulsion without any serum whatever. The whole of these tubes are placed in an incubator at the body temperature for twenty-four hours, at the end of which time the tubes are inspected.

If any importance is to be attached to the results, the tube containing plain emulsion, and all the tubes containing emulsion and serum from the non-infected animal, must be unaltered in appearance. Furthermore, the three tubes from the animal known to have been infected must show distinct agglutination, the evidence of which will be that the liquid in the tubes has now become quite clear owing to settlement of suspended bacilli to the bottom. Assuming that the things have worked

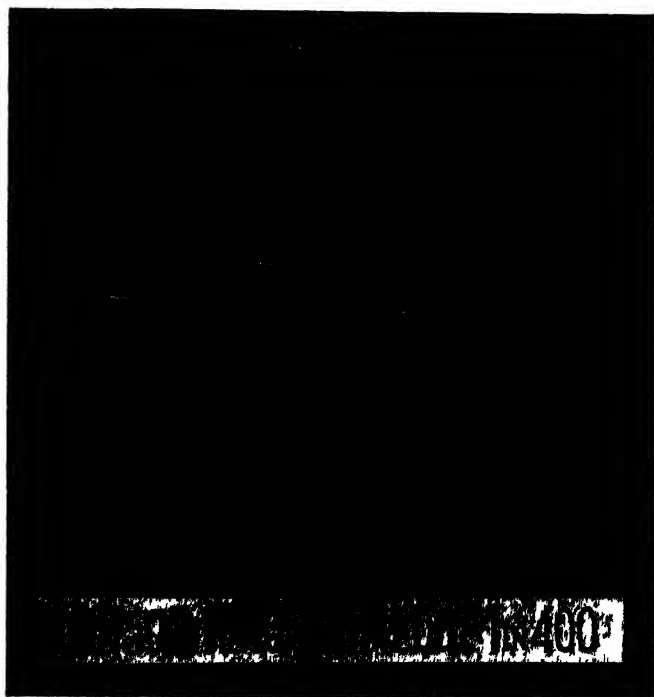


FIG. 4.—A series of four tubes containing serum from a suspected cow. Agglutination has been complete in the left hand tube, nearly complete in the next, and distinct though less in the third. No agglutination has taken place in the fourth (right hand) tube.

The agglutination proves that the suspected cow was actually affected with contagious abortion.

out in this way, one is now able to judge whether the suspected animal whose serum is being tested is an infected animal or not. In the former case some or all of the tubes will show complete agglutination, whereas if the animal has not been infected no agglutination will have taken place, and the tubes will show just the same appearance as when they were placed

in the incubator. The appearances presented by the different sets of tubes can be gathered from the accompanying illustrations (Figs 3 and 4).

When it is declared that this test is a valuable one for the diagnosis of contagious abortion, that is equivalent to stating that in the immense majority of cases blood serum from an animal which has not been infected with contagious abortion will not agglutinate emulsions of abortion bacilli in the proportions given above, but that blood serum from animals that have been infected with contagious abortion will cause agglutination in these proportions. With regard to the first of these points, it may be stated that McFadyean and Stockman¹ tested blood serum from 535 presumably healthy cattle, viz., 485 steers, 34 bulls, 6 heifers and 10 calves, and found that in only three cases (2 bulls and 1 steer) did the blood serum cause complete agglutination in the strength of 1 in 50. The history of these three animals was not obtainable, but, since it is now known that both steers and bulls can be infected with contagious abortion, it would not be justifiable to regard the agglutination in these cases as accidental, that is to say, resulting from something else than previous infection with abortion bacilli. However, even allowing that they were of that nature, it is important to observe that, if one had been relying upon the agglutination test to determine whether any of these 535 animals had been infected with contagious abortion, an error in diagnosis would have been made in only three cases.

Turning next to the other point, viz., the question whether the blood serum of infected animals generally or always causes agglutination, it may be stated that the authors above mentioned tested blood serum from 127 cows which had actually aborted or which came from herds in which cases of abortion had recently occurred, and they found that in fifty of these cases complete agglutination occurred in serum dilutions of 1 in 50. More recently blood from over 2,000 cows belonging to herds in which cases of abortion had recently occurred has been tested at the Royal Veterinary College, and the results (of which details will hereafter be published) support the opinion that with few or no exceptions blood serum from cows which have aborted from infection with the abortion bacillus will cause complete agglutination in serum dilutions of 1 in 50.

The great value of this test, however, lies in the fact that it enables one to detect the disease during its early stages, or, at least, before abortion, has occurred. It can also be relied upon to determine the nature of an abortion although weeks or even months have elapsed since the act.

¹ *Journal of Comparative Pathology and Therapeutics*, Vol xxv., page 22

Prevention.—The consideration of this part of the subject falls naturally into two parts, viz., (1) the means by which a healthy herd may be kept free from contagious abortion, and (2) the measures which may be employed to eradicate the disease from an infected herd.

1. There is no doubt that the usual cause of an outbreak of abortion in a previously healthy herd is the introduction of an infected animal. In the great majority of cases the animal which thus serves as the starting point of an outbreak is a cow or heifer, but facts already mentioned indicate that it may sometimes be a bull. Except when there is perfectly trustworthy evidence that a newly purchased animal comes from a healthy herd there is only one practicable safeguard against the possible introduction of infection, viz., to keep the animal isolated until the agglutination test has freed it from suspicion. Inasmuch as a certain time must elapse after infection before a positive reaction to this test can be obtained, it is advisable to delay the test for three or four weeks after purchase. This may appear a troublesome procedure, and in dairy herds in which sales and purchases are frequent it can hardly be considered practicable. In breeding herds, however, and especially in valuable pedigree herds, the trouble and expense of such precautionary measures can hardly be pronounced out of keeping with the risk of incurring the serious losses which an outbreak of contagious abortion always entails.

2. To eradicate contagious abortion from a herd is a problem of much greater difficulty. It must be stated, in the first place, that there is no satisfactory evidence that the disease can be either cured or prevented by the administration of any drug whatsoever. The alleged success of treatment with carbolic acid reposes on a very obvious fallacy, viz., that the disappearance of the disease from a herd which has been treated in this way cannot have been due to natural causes. It has long been known that under certain circumstances contagious abortion often disappears without any treatment whatever, and the fact can be most reasonably explained by assuming that, speaking metaphorically, the fire has died out from lack of fresh fuel. Although, unfortunately, there are a good many exceptions to the rule, cows that become infected while pregnant generally make a complete natural recovery after the act of abortion or parturition, and are for a time thereafter immune against re-infection. Hence the disease tends to die out in a few years provided no fresh animals are introduced into the herd. A fact which is quite in harmony with this view is that after one or two bad seasons of abortion the further cases are mainly or entirely among heifers carrying their first calves.

For a good many years past the preventive measures

recommended by the late Professor Nocard have been extensively practised, but it must be admitted with little or no apparent benefit. The treatment consisted in frequent disinfection of the premises, combined with repeated sponging of the hindquarters of the cows and syringing of their genital passages with germicidal solutions. These latter measures were based on the view that infection usually took place *per vaginam*, and they are obviously futile for the prevention of infection by the mouth. Frequent disinfection of the premises is no doubt advisable, but the repeated injection of disinfectants into the genital passages of healthy cows in order to safeguard them from infection must be condemned as being both useless and irritating.

As is the case with every chronic contagious disease in which there is a long latent stage, any hope of being able to arrest an outbreak of contagious abortion must lie in the possibility of early accurate diagnosis. The agglutination test provides that possibility and indicates a new way of dealing with outbreaks.

A point which cannot be too strongly emphasised is that every case of abortion should be regarded as of the contagious kind until the contrary has been proved. It must, of course be admitted that there are cases in which the circumstances may be held to prove that the abortion is the result of some such cause as severe mechanical injury, and is not of the contagious kind, but such cases are rare. In two instances that have recently come under the writer's notice the owner considered it almost certain that the abortion was the result of accident (falling into a ditch in one case, fright and breaking fences in the other), but the agglutination test proved that both cows were affected with contagious abortion. As soon as the existence of contagious abortion has been proved in a herd the agglutination test should be applied with the least possible delay to every breeding animal in it. The test may show that only a small number of animals are affected, and in that event the owner will probably be able to get out with very little loss by disposing of these to a butcher. If they are very valuable it may be possible to isolate them. Unfortunately, in order to be effective such isolation must include separate pasture as well as separate houses, and it must be maintained for at least three months after the suspected cow has calved or aborted.

Disinfection of premises ought, of course, to be practised, and after abortion the foetus and its membranes ought to be destroyed by fire or deeply buried. The genital passages of the cow may also be washed out occasionally as long as any visible discharge is coming away, and the manure and litter should not be spread on grass land.

It is not so easy to advise an owner when the agglutination test proves that a large proportion of the cows are already infected. If isolation of the diseased animals is possible it ought to be tried, but in the contrary case at the present time the only possible alternative to allowing the disease to run its course is to vaccinate one month after calving each cow in the herd. Such vaccinated cows should not be put to the bull within less than three months. Heifers that are to be brought into the herd should also be vaccinated three months before service.

What is here referred to as vaccination is carried out by injecting living or dead artificial cultures of abortion bacilli under the skin. The use of dead bacilli in this way is devoid of danger but it is probable that it is of little value for conferring immunity. The injection of large doses of living bacilli does undoubtedly confer a considerable degree of immunity, but it must be remembered that it is a dangerous proceeding in the case of pregnant cows, and that even when the animal is non-pregnant at the time of vaccination it may cause abortion during the ensuing pregnancy if too short a period is allowed between vaccination and service.

It is to be hoped that the trials of this method of dealing with outbreaks which have recently been made under the supervision of the Board of Agriculture and Fisheries will provide information to show whether it can be recommended as both safe and efficacious.

Lastly, it may be pointed out that when it appears to be impossible to arrest an outbreak, owing to the lack of facilities for isolating the animals found to be already infected, the best plan is to endeavour to run the herd for the next year or two with as few changes as possible. To dispose of the cows that have aborted and replace them by fresh animals is objectionable, because the majority of animals make a complete recovery after abortion and in consequence of immunity are likely to carry their next calves to full term, whereas any healthy cows brought into an infected stock serve as fresh fuel to the fire.¹

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¹ The author is indebted to Mr. A. L. Sheather, B.Sc., for the photographs from which the illustrations in the article have been prepared.

COMPENSATION FOR THE UNEXHAUSTED MANURIAL VALUES OF FEEDING STUFFS AND FERTILISERS.

THE first attempt at putting on a really scientific basis the compensation to be awarded for the unexhausted manurial values of foods consumed on the farm was made by Lawes and Gilbert as long ago as 1870.

After showing the fallacy of assessing compensation on the basis of the original "cost" of the materials, Lawes and Gilbert drew up a table of values founded upon the actual manurial constituents left in the dung after deducting what had been lost in the maintenance and live-weight increase of the animal, and also any loss incurred during making and storing of the manure.

The Tables thus drawn up were first published in 1875. They were subsequently revised in the years 1885, 1897, and 1898.

Changes in the prices of manurial constituents, and increase of knowledge as the result of experience derived from experimental work, conducted alike at Rothamsted, Woburn, and on the Continent, with regard to the losses in the making of farmyard manure and the practical value of the manurial constituents of food in a rotation, led to a reconsideration of the scale. This was done by the present writers in 1902.

The Tables, thus revised, met with general acceptance, and in large measure have replaced the local systems formerly in vogue.

Time, however, has brought its changes again, and there has been a growing feeling that still further revision is required. Firstly, the prices of manurial ingredients have gone up, more especially in respect of the nitrogenous ones. Further, the inconvenience of spreading compensation over so long a period as four years has been increasingly felt. These circumstances induced the leading professional bodies connected with agricultural valuation to meet in conference, and ultimately the present writers were invited to again undertake a revision of the Tables, and to give replies to a number of questions which were raised in the progress of the discussion. We were further invited to deal, not only with foods consumed on the farm, but also to draw up, if possible, a scale of compensation for artificial and other manures used on the farm, but the full value of which had not been worked out by crop-growing.

Our replies to these various questions are contained in the report recently issued (October, 1913) to the Central Association of Agricultural and Tenant Right Valuers.

It has been thought desirable, in addition to putting forward our revised Tables and our replies to the enquiries made, to contribute a paper in which there would be set out the general considerations which have weighed with us in giving our recommendations.

By the kind consent of the Central Association, permission has been accorded us to publish this in the Journal of the R.A.S.E., where our former Tables of 1902 appeared.

REASONS FOR REVISION OF PREVIOUS TABLES.

We propose considering first the circumstances which have led to a revision of the earlier Tables. These reasons are twofold—(1) The rise in prices of manurial ingredients; (2) the growing feeling that the spreading of compensation over a period of four years is alike inconvenient and not borne out by recent investigation nor in actual agricultural practice.

RISE IN PRICES OF MANURIAL INGREDIENTS.

It may at once be pointed out that fertilisers generally have decidedly gone up in price since 1902. This applies mainly to nitrogenous fertilisers, potassic ones having remained much about the same, while phosphatic fertilisers have increased slightly, though, perhaps, hardly materially. The rise in unit value of nitrogen, however, has been very marked. Sulphate of ammonia, for example, has risen in price, since 1902, from 12*l.* a ton to about 14*l.*; nitrate of soda, similarly, from about 10*l.* a ton to 12*l.*, and other nitrogenous materials in proportion.

In our former Tables we put the unit value of nitrogen, as found in common nitrogenous manures used on the farm (such as sulphate of ammonia, nitrate of soda, bone meal, fish manure, blood, shoddy, guano, &c.), at 12*s.* per unit. A revision of current prices for the above materials warrants us in now putting the unit value of nitrogen at 15*s.* instead of 12*s.* as formerly.

We do not consider it necessary to make any alteration as regards phosphoric acid. There has been a slight rise in the price of phosphatic manures, but not a material one. Superphosphate, basic slag, and bone dust, for instance, have remained much as they were. This is also the case with fertilisers supplying mainly potash; Kainit, for instance, has remained steadily at about 50*s.* per ton.

The question was, of course, present in our minds, whether the change in prices was merely a fluctuation, or a permanent change. We have come to the conclusion that the rise is likely to be sustained for some time to come, and is not merely temporary, and we have felt that we should alter our Tables in this direction accordingly,

COMPENSATION FOR LOSS OF POTASH.

We have, however, considered it desirable to introduce a change of another kind in our Tables as regards the compensation to be given for potash. Previously we had reckoned the whole of the potash to be recovered in the manure. This, however, we now think to be hardly correct, and that, as with phosphoric acid, so with the potash, there must be a certain loss of potash, more especially in respect of the loss by drainage of the liquid portions of manure. Accordingly, we have, in our new Tables, suggested that three-quarters of the potash, and not the full amount, be credited to the manure.

PERIOD OVER WHICH COMPENSATION SHOULD BE SPREAD.

In 1902 we proposed that compensation should be spread over a period of four years. This was based on the fact that, taking a rotation course, as exemplified in the Rothamsted and Woburn Experiments, there was evidence of the influence of manurial application lasting up to the fourth crop of a rotation. Indeed, it could be shown by the Woburn Experiments on the continuous growth of wheat and barley, that the applications of farmyard manure made from purchased foods continued to show a residue from their application for a much longer period than this. Some influence could even be shown for so long a time as twenty years, the land being practically raised permanently in fertility, for the crops grown subsequently never went down to the level of the unmanured plots.

On the other hand, we have had to take into account more particularly the fact that the nitrogen contained in purchased feeding stuffs (and it is chiefly nitrogen for which compensation is paid) is, in the main, contained in digestible compounds, and is therefore excreted from the animal as urea. This urea passes rapidly into ammonia, which is not only subject to loss in the manure, but also exerts its effect on the first and second crops only that are grown with the manure. The experiments at Rothamsted, to be described later, show practically no returns in the third and later crops for the increased nitrogen in the dung that is brought about by cake feeding, &c. The long continued effect of dung is due to the more slowly acting compounds of nitrogen contributed by the litter and the undigested residues of the food.

In our former paper (1902) we gave instances from rotation experiments conducted both at Rothamsted and at Woburn, the general outcome of which was to show that when a root-crop was fed on the land, and was followed by barley, the barley crop was materially benefited thereby; that the next crop showed also a gain, but a much reduced one, and that when the wheat crop—the fourth in the rotation—was reached, the

influence of the manuring had practically ceased to tell. These experiments are fully discussed in the R.A.S.E. Journal, Vol. 63, 1902, pp. 99-105, and as the continuation of them from then to the present date gives results similar to the foregoing, we consider that we are justified in reducing the period over which compensation shall be spread.

Taking all these matters into consideration, we are now agreed that in practice a period of four years over which compensation is to be spread, is inconveniently long and hardly borne out by experience. Moreover, the farmer's records rarely extend so far back as four years, nor can they be adequately checked.

The desire is evident to have matters of compensation promptly settled as between the in-coming and the out-going tenant. Accordingly, we are agreed to recommend that a period of two years be substituted for our previous one of four years over which compensation is to be spread, and we have revised our Tables in this sense.

MANURE MADE UNDER DIFFERENT CONDITIONS.

We have introduced a further change in our Tables, feeling, as we do, that a discrimination should be drawn between manure that is made in yards and that obtained by feeding direct on the land. It is recognised that when an animal is being fed upon the land, the urine, which contains the most valuable manurial constituents of the food, is very completely absorbed by the soil, without the large loss of ammonia that occurs during the making and storage of dung.

In the case of manure stored in heaps it is on the nitrogen that the loss chiefly falls, both through the storage of the manure and the washing by rain and loss by drainage which it may suffer.

It would only seem right, therefore, that higher compensation should be given for the food that is fed direct on the land than for that which is consumed in yards and the manure subsequently stored in heaps.

In our original Tables, as the result of experiments on the losses which farmyard manure undergoes in making and storing, we reckoned that 50 per cent. of the total manurial constituents would be lost under ordinary good farming practice before the manure went out on the field.

We now consider that when the manure is not subject to these changes it would be right to allow for 70 per cent. of the nitrogen being retained instead of the 50 per cent. given in our former Tables. This should apply equally to the case of sheep feeding on the land and to bullocks and cows on pasture when either class of stock is consuming

cake or corn, the manure being deposited direct on the land.

As this increase is due to the greater proportion of ammonia saved, it should only apply to the crop for which the manure is directly used, and not for a subsequent crop. Accordingly, we have divided the column D into two sections according as the food is consumed in yards, D (1) and D (2), or is fed direct on the land, D (3) and D (4).

In suggesting this change we are aware that we are complicating our Tables by the introduction of additional columns, and that it would be more convenient to have a single scale which would meet all purposes.

We are, however, so convinced of the justification for drawing a distinction between food consumed on the land and that made into manure in the yard, that, at the risk of complication, we have introduced this modification.

It may be said that it is impossible to get to know how much cake, &c., is fed on the land, and how much at home, and that a farmer about to quit will be disposed to claim for a large proportion having been fed on the land, so that he may get compensation on the higher scale. But we do not anticipate more difficulty over this than there is in ascertaining, as at present, whether the cake has been purchased at all, and how much. In any case the valuer will know the custom of the country, and whether it is usual to feed one-half, one-third, or some other proportion of the roots on the land, and, similarly, how the grass land is treated in this respect. With this knowledge, the existence of the supplementary columns, D (3) and D (4), will enable the valuer to reckon what proportion he may fairly put to one head or the other.

"FIRST YEAR"—"SECOND YEAR."

Some misunderstanding having arisen from the use of the expressions "First year," "Second year," &c., in our former Tables, we have thought it well to indicate clearly in our revised ones what we mean by this.

By "First year" we mean the year in which the manure is made, whether it be in yards and stored for later use, or whether it has been already put on the land as in the case of sheep feeding or in that of bullocks consuming cake or corn on pasture, but in all cases before the crop, if any, grown with the manure has been utilised. The first column, D (1), of our new Table means the value to be assigned to the manure before the out-going tenant has derived any benefit from it.

By "Second year" we wish to indicate the state of things that rules after a crop has been grown with the manure, that is, the residue still remaining after that crop has been grown.

To make this clear, we have substituted for "First year," "Second year," &c., in our Tables the terms "Before one crop has been grown," "After one crop has been grown." As a rule the manure will have been made during the winter and be applied to the following spring or root crop. D (1) will accordingly, as a rule, mark the value of the manure as it is in the yards, D (2) after the root crop has been grown.

In a case where the manure has been used for the root crop, and where this crop, though still on the land at the time of the giving up of the tenancy, has to be paid for by the in-coming tenant, the value is indicated by column D (2), for the manure has been used for the crop, and is clearly not of the same value as when lying in the yards, but is only the residue left after the taking out by the root crop of what the latter will utilise.

STORING OF MANURE.

Another point upon which there has been misunderstanding is in regard to the conditions under which we presume the manure to have been made at the time it is valued, and the precautions against loss that should have been observed in the making and storing of it. We would state clearly that our Tables, as set out, presume the manure to have been made in boxes or yards where there is no avoidable loss by drainage, and where the manure is not washed by rain; further, that the manure has been made with all reasonable care, and that it has been stored, protected from the rain, and not unduly exposed or otherwise subjected to loss.

We have shown in our original Tables that even under ideal conditions, such as those which existed at Woburn (where the manure was made in pits with cemented bottom and sides, and was, after removal, covered with earth) there was an unavoidable loss of from 30 to 35 per cent. of the original manure value as calculated from the composition of the materials used. Reckoning that these conditions would not be obtained in ordinary practice, we followed Lawes and Gilbert in their estimate that the loss would be about 50 per cent. under ordinary good farming conditions, and our Tables are based on this assumption. When these conditions have not been complied with, and the manure has been made in open yards and has been exposed to rain, so that the liquid portions may to a great extent have drained away, or where the manure has been left exposed in uncovered heaps in a field and the washings have sunk into the earth around, it is clear that the losses may be still more.

It is impossible to frame separate scales for all such sets of conditions, and this is a matter on which the valuer must exercise

his discretion, and make such deductions as, in his opinion, are justified. But, seeing that manure, be it ever so badly kept, can only to a limited extent be deprived of its manurial constituents, and that the more insoluble portions will remain in the dung despite much washing by rain, we have felt it wise to insert the provision that any deduction on account of bad storage shall not exceed 50 per cent. of the value as set out in our column D (1); that is, even in the worst cases a figure not lower than one-half the corresponding one in our Table D (1) will represent the value of the manure.

NEW FEEDING MATERIALS.

We have been frequently asked if we would be willing to extend our Table of Foods by the inclusion of further items, new feeding materials, &c. While this is undoubtedly desirable in the case of foods in regular use, we feel it necessary to avoid overloading our Tables with matter that would only be of occasional use.

For the same reason we think it desirable to exclude all articles which are really of a "proprietary" character, and others which come on the market for a time and then disappear. Moreover, the Fertilisers and Feeding Stuffs Act now obliges vendors to give on the invoice the analysis of the foods which they sell. Included in such statements are the albuminoids, and from these the nitrogen—which is the main manurial constituent—can be obtained by dividing the percentage of albuminoids by $6\frac{1}{4}$. The phosphoric acid and potash are of minor significance, and will not vary in foods to the extent that the albuminoids do. It is accordingly comparatively simple in the case of a material not included in our Tables, but with the analysis in hand, to assign to it, by comparison with foods of like composition, its appropriate place in the Table and its manurial value.

Our opinion has been asked if we would include such things as gluten meal, meat meal, compound cakes, and "proprietary" articles such as "uvecó," "molassine meal," &c., also treacle.

The use of some of these does not seem to us sufficiently general to warrant their inclusion, while others, such as "molassine meal" and treacle, have no appreciable manurial value at all. At the same time we have thought it well to add to our list three further materials. These are soya bean cake, earth-nut cake, and Bombay cotton cake. The widespread use of the latter makes it desirable to separate it from the ordinary or "Egyptian" cotton cake, and this we have accordingly done.

MECHANICAL VALUE ATTACHING TO STRAW USED AS MANURE.

It is recognised that, in addition to the manurial constituents of value which straw manure possesses, it exercises a further benefit, one which can best be described as its "mechanical" value. This benefit is exercised alike on light and on heavy soils when farmyard manure made with straw is used. To the former class of soil it imparts "substance" and tends to retain moisture in the land; on heavy soils it helps to open them out, lightens them, and renders drainage easier. These beneficial effects are over and above anything possessed by the purely manurial ingredients of the dung; accordingly, when straw has been sold off the farm that ought to have been used as litter, we consider that the farm has been depreciated to this extent, and that additional compensation should be paid when the land has been so deprived of these benefits.

This would not apply, however, where the hay or straw would normally have been given as food to stock. Moreover, it must be left to the valuer to determine what proportions should, under the ruling custom of the district, have been consumed, and what proportion trampled down as litter by stock. Also, it may be that there are cases where it can be clearly shown that land would not be benefited by such application, and is not in need of the mechanical benefits conferred by the use of straw dung. This, again, is a matter which must be left to the discretion of the valuer.

The mechanical value of the straw thus used we consider to be about equal to that of its manurial benefit, and we consequently assign a figure of 7s. per ton to be paid as compensation for removal of straw, in addition to the 7s. per ton already allowed for its manurial value.

We should point out that, in dealing with this matter, we have had purely to do with the losses of manurial material to the land, and not with any point that has reference to breach of custom, contract, or agreement.

FOOD-STUFFS FED TO MILKING COWS.

The question has been asked whether in the case of foods given to milking cows less compensation should be allowed than for the same foods when given to fattening beasts, because of the constituents taken off the farm in the form of milk, or by the fact of the cows carrying their calves.

It is quite true that milking cows excrete less of the nitrogen, phosphoric acid, &c., in their food than do fattening bullocks. They are, however, pastured to a greater degree upon the land, under which conditions they will return more than do bullocks which are fed in the yard; hence in this case

the value of their excreta would probably be represented by figures somewhat in excess of those of column D (1).

On the other hand, while the cows are within doors the proper amount of compensation would be less than that indicated in D (1). The circumstances of the case could only be met by the addition of another column to the Tables, or, more probably, two fresh ones. Apart from the inconvenience of this, there would have to be taken into consideration what proportion of the time the cows were out at grass, and what time under cover. This would be very hard to arrive at, and so we have decided that it would be better to class these cases all together, and apply the figures of column D generally to foods consumed by milking cows as well as by fattening bullocks. It would be open to the valuer to use his discretion either as to allowing rather more when the cows were, for the greater part of the year, out at grass, or a somewhat less amount where the cows were kept in the stalls with little or no litter, and where the urine to a large extent went to waste.

FOOD-STUFFS FED TO YOUNG STOCK.

It might similarly be urged that young stock, by reason of their building up their body structure, will use up more of the constituents of food and return less in manure than would older stock, and that, therefore, a less value should be assigned in their case to the litter. But in practice it is never possible to discriminate between what food is given to young stock and what to older, nor would the manure of each be kept separate. Nor again would it, more than exceptionally, be the case that only young stock was kept on a farm. So here, too, we think it advisable to avoid bringing any further sub-divisions into our Table, and to class the manure from young and old stock alike under D.

FOOD-STUFFS FED TO PIGS.

Much the same question has been raised in regard to the manure made by pigs. It would, however, seldom be the case that the manure from pigs was kept separate from the rest, and, on a general farm, all manure, whether from fattening bullocks, milking cows, young stock, or pigs, would be put together in one heap, and be used indiscriminately.

It would overburden the Tables to no good purpose to attempt to provide for all these varied circumstances, and, accordingly, we have decided to class them together.

FERTILISERS.

In addition to revising our scales for compensation to be paid for Feeding-stuffs consumed, we were asked to put out, if

possible, a similar scale for the assessment of the unexhausted value of such Fertilisers as are generally used on a farm, and to indicate what might be expected to be the period of duration of these, and how much of the original value is left after the taking of one or more crops. This we have found to be by no means an easy matter. In the first place, reliable sources of information are but few in number. Then, it is well-known that different fertilisers act very differently according to the nature of the land to which they are applied. Thirdly, there are the differences attaching to the growing of different crops, for these will not all alike remove the same constituents, nor to the same extent. The influence of manures must depend, not only upon the suitability of them for the particular purpose for which they are employed, but also upon the condition of the land, and whether they have been rightly applied. Hence, to draw up a set of Tables attempting to provide for all cases that might occur, for all classes of land, for all variations of cropping and rotation, would involve such complication as to render them practically useless.

The most we have been able to do is, after a consideration of such data as exist, and of what is known generally regarding the action of different fertilisers, to draw up a general Table which, at least, will have the merit of being an approximation to the truth, and certainly be better than many of the haphazard and variable systems of valuation at present adopted.

We have, however, seen it well to discriminate between the application of fertilisers to arable land and grass land respectively. Where, as in the latter case, there is always a crop on the land, the constituents of manure are more fully retained and do not drain away so readily as on arable land.

Thus, we have allowed, in the case of grass land, compensation to extend over a longer period than with arable land. Notably is this the case with such materials as basic slag and lime, the influence of which is known practically to last longer on grass land.

Though one crop, say for example, a cereal crop, will not take as much out of the land as does a root crop or a potato crop, it is impossible to discriminate between the residues each would leave behind. The decisive factor is less the withdrawal by the crop than the changes which afterwards go on in the soil.

Between different classes of soil, also, we have not been able to discriminate, but must leave it to the discretion of the valuer whether the manures have been rightly applied or not. This is more especially the case when manure has been put on grass land, *e.g.* in cases such as those of superphosphate, bones, basic slag, and lime. Superphosphate, for example, is in some

TABLE I.—*Showing the Composition, Manurial and Lawes and Gilbert's Tables, 1897,*

No	Food	VALUATION PER TON AS						
		A			B			
		Nitrogen			Phosphoric acid			
		Per cent in food	Value at 15s. per unit	Half of value to manure	Per cent in food	Value at 3s. per unit	Three-quarters of value to manure	
		Per cent.	s. d.	s. d.	Per cent.	s. d.	s. d.	
1	Decorticated cotton cake	6 90	103 6	51 9	3 10	9 4	7 0	
2	Undecorticated cotton cake (Egyptian)	3 54	53 2	26 7	2 00	6 0	4 6	
3	Undecorticated cotton cake (Bombay)	3 10	46 6	23 3	2 50	7 6	5 7	
4	Linseed cake	4 75	71 4	35 8	2 00	6 0	4 6	
5	Linseed	3 60	54 0	27 0	1 54	4 7	3 5	
6	Soya-bean cake	6 85	102 8	51 4	1 30	3 11	2 11	
7	Palm-nut cake	2 50	37 6	18 9	1 20	3 7	2 8	
8	Cocoa-nut cake	3 40	51 0	25 6	1 40	4 2	3 1	
9	Earth-nut cake	7 62	114 4	57 2	2 00	6 0	4 6	
10	Rape cake	4 90	73 6	36 9	2 50	7 6	5 8	
11	Beans	4 00	60 0	30 0	1 10	3 4	2 6	
12	Peas	3 60	54 0	27 0	0 85	2 7	1 11	
13	Wheat	1 80	26 10	13 5	0 85	2 7	2 0	
14	Barley	1 65	24 10	12 5	0 75	2 3	1 8	
15	Oats	2 00	30 0	15 0	0 60	1 10	1 5	
16	Maize	1 70	25 6	12 9	0 60	1 9	1 4	
17	Rice meal	1 90	28 8	14 4	0 60	1 9	1 4	
18	Locust beans	1 20	18 0	9 0	0 80	2 5	1 10	
19	Malt	1 82	27 4	13 8	0 80	2 5	1 10	
20	Malt culms	3 90	58 6	29 3	2 00	6 0	4 6	
21	Bran	2 50	37 6	18 9	3 60	10 10	8 2	
22	Brewers' grains (dried)	3 30	49 4	24 8	1 61	4 10	3 8	
23	Brewers' grains (wet)	0 81	12 4	6 2	0 42	1 3	0 11	
24	Clover hay	2 40	36 0	18 0	0 57	1 9	1 4	
25	Meadow hay	1 50	22 6	11 3	0 40	1 2	0 11	
26	Wheat straw	0 45	6 8	3 4	0 24	0 9	0 7	
27	Barley straw	0 40	6 0	3 0	0 18	0 6	0 4	
28	Oat straw	0 50	7 6	3 9	0 24	0 9	0 7	
29	Mangolds	0 22	3 4	1 8	0 07	0 3	0 2	
30	Swedes	0 25	3 10	1 11	0 06	0 2	0 1	
31	Turnips	0 18	2 8	1 4	0 05	0 2	0 1	

Compensation Values of Feeding Stuffs (Revised from
and Voelcher and Hall's Tables, 1902).

MANURE			Compensation value for each ton of the food consumed						Foods	No.
C			D							
Potash			Food made into dung		Food consumed on land					
Per cent in food	Value at 14 per unit	Three- quarters of value to manure	(1) Before one crop has been grown or removed	(2) After one crop has been grown or removed	(3) Before one crop has been grown or removed	(4) After one crop has been grown or removed				
Per cent	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.				
2.00	8 0	6 0	64 9	32 4	85 6	32 4	{ Decorticated cotton cake }	1		
2.00	8 0	6 0	37 1	18 6	47 9	18 6	{ Undecorticated cotton cake (Egyptian)	2		
1.61	6 5	4 10	33 8	16 10	43 0	16 10	{ Undecorticated cotton cake (Bombay).	3		
1.40	5 7	4 2	44 4	22 2	58 10	22 2	Linseed cake	4		
1.37	5 6	4 2	34 7	17 3	45 4	17 3	Linseed	5		
2.21	8 10	6 7	60 10	30 5	81 6	30 5	Soya-bean cake	6		
0.50	2 0	1 6	22 11	11 5	30 6	11 5	Palm-nut cake	7		
2.00	8 0	6 0	34 7	17 3	44 9	17 3	Cocoa-nut cake	8		
1.50	6 0	4 6	66 2	33 1	89 1	33 1	Earth-nut cake	9		
1.50	6 0	4 6	46 11	23 5	61 8	23 5	Rape cake	10		
1.30	5 2	3 10	36 4	18 2	48 4	18 2	Beans	11		
0.96	3 10	2 10	31 9	15 10	42 6	15 10	Peas	12		
0.53	2 1	1 7	17 0	8 6	22 5	8 6	Wheat	13		
0.55	2 2	1 7	15 8	7 10	20 8	7 10	Barley	14		
0.50	2 0	1 6	17 11	9 0	23 11	9 0	Oats	15		
0.37	1 6	1 1	15 2	7 7	20 4	7 7	Maize	16		
0.37	1 6	1 1	16 9	8 4	22 6	8 4	Rice meal	17		
0.80	3 2	2 4	13 2	6 7	16 9	6 7	Locust beans	18		
0.60	2 5	1 10	17 4	8 8	22 9	8 8	Malt	19		
2.00	8 0	6 0	39 9	19 10	51 6	19 10	Malt culms	20		
1.45	5 9	4 4	31 3	15 7	38 10	15 7	Bran	21		
0.20	0 10	0 8	29 0	14 6	38 11	14 6	Brewers' grains (dried)	22		
0.05	0 2	0 1	7 2	3 7	9 9	3 7	Brewers' grains (wet)	23		
1.50	6 0	4 6	23 10	11 11	31 0	11 11	Clover hay	24		
1.60	6 5	4 8	16 10	8 5	21 4	8 5	Meadow hay	25		
0.80	3 2	2 4	6 3	3 1	7 7	3 1	Wheat Straw	26		
1.00	4 0	3 0	6 4	3 2	7 6	3 2	Barley Straw	27		
1.00	4 0	3 0	7 4	3 8	8 11	3 8	Oat Straw	28		
0.40	1 7	1 2	3 0	1 6	3 8	1 6	Mangolds	29		
0.22	0 11	0 8	2 8	1 4	3 7	1 4	Swedes	30		
0.30	1 2	0 11	2 4	1 2	2 10	1 2	Turnips	31		

parts advantageously used for grass land ; in other parts no benefit is experienced from it. Basic slag, again, is invaluable on some lands, but useless on others. Bones, in their different forms, are very variable as regards their results ; while lime, though indispensable on some soils, may not be called for at all on others.

The matter of the prices charged for manures is again one beyond our power to check ; we must assume these to be fair. Inasmuch, however, as the Fertilisers and Feeding Stuffs Act compels the giving of the analysis on the invoice, a safeguard is introduced by which a competent valuer can form some opinion, or upon which expert opinion can be taken, as to the reasonableness of the price charged. We must, therefore, leave it to be understood that, while the Tables we have set out are to be taken as a guide, they must be subject to such modifications as the particular circumstances of the case demand.

The most recent information as to the residual value of fertilisers is that obtained from a large series of experiments which were commenced in 1904 in Little Hoos Field, Rothamsted, and which are still in progress. These have already given certain definite issues regarding the residue left for subsequent crops after one or more have been taken off the land.

Perhaps one of the most striking points brought out is that phosphates, whether derived from superphosphate, bones, or basic slag, behave much alike as regards their residues. A further point is that in nitrogenous manures like Peruvian guano, fish guano, meat meal, &c., as also in manure cakes, the greater portion of the value is used up in the first crop. Slowly-acting organic manures, such as shoddy, hoofs, and horns, &c., last for a longer period, and for this duration allowance should be made.

As regards lime, the Woburn Experiments have clearly shown the duration of this both on arable and on grass land. Lastly, the Rothamsted and Woburn Experiments alike have demonstrated that for such soluble salts as nitrate of soda, sulphate of ammonia, and the like, there is practically nothing left over after the first crop has been taken off.

Acting on these data, we have drawn up the following Table of compensation (page 117) for the use of fertilisers generally.

The first point that will probably strike the practical man as being somewhat strange is the putting of superphosphate and bones on the same level. This, however, is the direct outcome of the experiments on Little Hoos Field, and superphosphate must clearly not be considered the transient material which it is too often supposed to be. On grass land, bones may be

TABLE II.

Table showing the Compensation to be awarded for the use of Fertilisers.

	ON ARABLE LAND					ON GRASS LAND				
	After 1st crop	After 2nd	After 3rd	After 4th	After 5th	After 1st year	After 2nd	After 3rd	After 4th	After 5th
	of cost					of cost				
*Superphosphate	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$
*Bones (raw and steamed)	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$
Dissolved Bones	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$
*Basic Slag	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$
Bone Manures	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$
Compound Manures not containing Bone	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$
Peruvian Guano	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$
Fish Guano	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$
Meat Meal	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$
Shoddy and Wool Waste, Fur Waste, Hair, Hoofs and Horns, Greaves, &c.	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$
Manure Cakes	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$
Dried Blood, Sulphate of Ammonia, Nitrate of Soda, Nitrate of Lime, Cyanamide, Kainit and Potash Salts.	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$
Lime	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$

Nothing

Nothing

* The Valuer must exercise his discretion as to the suitability of these manures when used upon grass land

expected to yield a benefit for a longer period, and we have lengthened their duration accordingly. Dissolved bones are more rapid in their action, and so a higher proportion has been put down as being taken up by the first crop. Regarding basic slag, a long series of statistics exist, notably those from the Cockle Park Farm of the Northumberland County Council. While basic slag is not so certain in its action on arable land, it is clear that, where it is well suited to grass land, the benefit may last for seven to eight years.

Bone and compound manures are very variable in composition, and it is with these that one meets with most cases of comparatively high prices being charged; we think ourselves justified, therefore, in putting these into a lower scale as regards their residual value than superphosphate or dissolved bones.

It may again cause some surprise that the effect of nitrogenous manures such as Peruvian guano, fish guano, and meat meal, is reckoned to be so readily exhausted; but this is what the experience of the Rothamsted Experiments in Little Hoos Field has shown. The same applies even more strikingly to manure-cakes and dried blood. It will, however, create no surprise to those who have followed the Rothamsted and Woburn Experiments, that we allow no appreciable residue in the case of nitrate of soda, sulphate of ammonia, or the more recently introduced nitrogenous fertilisers, cyanamide, nitrate of lime, &c.

Potash salts, however, possess a longer duration in the soil, and hence we reckon them to last through to the third crop.

Lastly, as regards lime, we have clear evidence from the Woburn Experiments that, on arable land, lime, when required, will exercise tangible benefit for quite seven years, and, on grass land, may be expected to last even longer.

In drawing up these new Tables, we have been actuated solely by the desire to put the system of valuation of unexhausted residues on as scientific a basis as possible, while having due regard to practical considerations. We know well the imperfections of our own knowledge of the subject, but, so far as the results of actual experiment are available, we have endeavoured to utilise these for the purpose of drawing up our Tables. We in no way, however, wish it thought that we are proposing to dispense with the Valuer, for, as our Paper will have shown, there are numerous points in which the judgment of the Valuer must be exercised, and our Tables are intended primarily to give him a sound basis upon which to work.

We have been much gratified by the reception already given to our earlier Tables, and we can but hope that the present revision and extension of them will be found of real benefit and will meet with general acceptance.

J. AUGUSTUS VOELCKER,
A. D. HALL.

[Copies of this article will be obtainable in pamphlet form at the Society's House, 16 Bedford Square, London, W.C., through any bookseller, or of Mr. John Murray, 50a Albemarle Street, London, W. Price one shilling. Half price to Members on application to the Society only.]

THE DURATION OF THE ACTION OF MANURES.

How long the action of a manure may be expected to last in the soil is a question of considerable scientific interest, and also of immediate practical importance, since an outgoing tenant is entitled to compensation for any added fertility he may have left in the land for the benefit of his successor.

The obvious answer would be that of simple arithmetic; the manure contains so many pounds of nitrogen, phosphoric acid, and potash; one or more crops are grown after its application, each containing a certain amount of these constituents; the difference, if any, calculated on the same scale of prices should then represent the value of the residue in the soil. We cannot, however, work along these lines; too many other factors than the crop withdrawals come into play. The nitrogen compounds in the manure in particular are subject to various losses of an incalculable nature—some of them are exceedingly stable, persist in the soil, and slowly become available to the plant; others change rapidly into ammonia and nitrates, and if they are not utilised by the crop are then liable to be washed out of the soil or destroyed by bacterial action. At Rothamsted the experiments have fully demonstrated that no part of the ammonia or nitrates applied as manure and not utilised by the crop persists through the winter for the benefit of the succeeding crop. On the lighter soil at Woburn there is a small residue, the amount of which depends upon the winter rainfall and temperature. Phosphatic manures are less subject to loss; they cannot be destroyed, and washing on ordinary soils is negligible. For example, at Rothamsted the whole of the unused phosphoric acid applied as superphosphate over a period of half a century still remains in the top nine inches of

soil. The phosphates do, however, undergo change, and by combination with the bases in the soil pass into compounds which are more insoluble and but slightly available to the crop, the character of the change depending upon the composition of the soil. Some, at any rate, of the unused phosphoric acid is thus put out of action, and the whole must be counted as of less value, pound for pound, than in the original manure. Potash behaves very similarly to phosphoric acid, though it is rather more soluble and subject to loss by drainage.

As the problem could not be solved by theoretical considerations, it was resolved at Rothamsted to subject it to actual trial, and the Little Hoos Field, in 1904, was set aside for that purpose. In view of the smallness of some of the effects the experiment has hardly yet lasted long enough for accurate results; the main trend is, however, sufficiently indicated to permit of certain general conclusions being drawn. The experiment took the following form: for each manure five plots were set aside—one was a check plot, which at no time received the manure under investigation. Of the other plots, one received the manure in 1904, but remained unmanured in 1905, 6, and 7; a second plot was manured in 1906, but not in 1907; the third in 1907. Thus in 1907, by which year the experiment was in full swing, there was a plot that had been manured in that year, another that had been manured in the previous year; a third two years previously; and a fourth three years previously. In 1908 it was considered that the manure applied in 1904 to the first plot had been exhausted by the four crops grown with it, and the manuring was renewed on that plot; on the second plot it was renewed in 1909, and so on; the result being that in any year after 1907 there was a crop grown on some plot with the manure; on a second plot with the residue of the manure after one crop had been taken; on a third with the residue after two crops; and on a fourth with the residue after three crops; while there was a further check plot that had never received the manure. The Table on the following page will show more exactly the arrangement.

The field was farmed on a rotation of alternating corn and roots—swedes, barley, mangolds, wheat; clover being omitted because it would introduce nitrogen. In the field there were eight sets of five plots; five for nitrogenous manures—dung made from roots and hay only, cake fed dung, shoddy (wool waste), Peruvian guano, rape dust, and three for phosphatic manures—bone meal, superphosphate, and basic slag. Once during each rotation a dressing of superphosphate and sulphate of potash was applied equally to all the nitrogen plots; similarly for the corn crops a dressing of sulphate of ammonia was given alike to all the phosphatic plots. It will be noticed that for each

Year	Plot A	Plot B	Plot C	Plot D	Plot E
1901	Manure	—	—	—	No manure Check
1905	No manure 1 year old residue	Manure	—	—	No manure Check
1906	No manure 2 year old residue	No manure 1 year old residue	Manure	—	No manure Check
1907	No manure 3 year old residue	No manure 2 year old residue	No manure 1 year old residue	Manure	No manure Check
1908	Manure	No manure 3 year old residue	No manure 2 year old residue	No manure 1 year old residue	No manure Check
1909	No manure 1 year old residue	Manure	No manure 3 year old residue	No manure 2 year old residue	No manure Check
&c	&c	&c	&c	&c	&c

manurial series there was one check plot unmanured; these were arranged diagonally across the field and the mean of all the five was used for comparison in the case of nitrogenous manures, the mean of three is the standard for the phosphatic plots. It will not be necessary here to give the details of all the crops (the actual amounts of manure applied and the yields are set out in the Guide to the Rothamsted Experiments and in the Annual Report from year to year); to bring them into comparison the mean yield (total produce, grain and straw or roots and leaves) on the check plots was each year taken as 100, and the other yields calculated to that standard. It will be convenient to consider separately the results obtained: (1) from dung, (2) from other nitrogenous fertilisers, (3) from phosphatic fertilisers.

1. *Residual values of rich and poor dung.*

The dung for the experiment was made afresh each year; a couple of bullocks were fed under cover on hay and roots alone, another pair alongside had the same roots and hay, the same straw litter, but in addition a good ration of 5-8 lb. of cake per diem. The two lots of dung were either taken straight from the stalls on to the land or made up into heaps side by side and treated exactly alike until they were carted out to the land and ploughed in. No attempt was made to

check the amount of food consumed in making the dung, but equal weights of the manure were taken, the application being at the rate of sixteen tons to the acre, and the lots were sampled as they were carted out.

The following Table I. gives a summary of the results :—

TABLE I.—*Yield from rich and poor dung over a period of four years.*

	YIELD—Total produce (unmanured plot=100)			
	Year of application	1 year old residue	2 year old residue	3 year old residue
	Mean of 9	Mean of 8	Mean of 7	Mean of 6
Dung from roots and hay only	134	123	114	106
Dung from roots and hay with cake	165	132	113	108

In the year of application the cake fed dung had a great superiority, it increased the yield above that of the unmanured plot by twice the amount of increase produced by the ordinary dung, *e.g.* if the unmanured plot gave 3 qr. of wheat, the plot receiving ordinary dung gave 4 qr., and the plot with cake fed dung 5 qr. In the following year, however, the superiority was much less manifest, the ordinary dung raised the yield by one quarter, the cake fed dung by one-third. In the following two years there was no significant difference in the effect of the two kinds of dung, the effect of the cake feeding persists for two years only, then, though the dung is still producing an effect, the poor dung is just as valuable as the rich. To understand these results let us turn to the analysis of the dung, mean values per cent., Table II. :—

TABLE II.—*Composition of dung.*

	Dry Matter per cent.	Nitrogen, per cent.			
		Total.	As Ammonia	As Amides, &c.	Insoluble
Dung from roots and hay	26.4	0.530	0.043	0.069	0.418
Dung from roots and hay with cake	26.6	0.701	0.147	0.118	0.436

The cake fed dung naturally contains the most nitrogen, 0.7 per cent. as against 0.53 per cent., but the difference is almost entirely in the ammonia and other soluble compounds,

for both kinds contain about the same percentage of nitrogen combined in an insoluble form.

This is exactly what should be expected from the fact that the nitrogen compounds in the cake, being almost wholly digestible, are excreted as urea, which changes rapidly into ammonia; thus the effect of cake feeding is to enrich the dung in ammonia and other active compounds of nitrogen, but not particularly in those more slowly acting insoluble compounds which come from the litter and the undigested portions of the food. From numerous other experiments we learn that ammonia and such compounds are only of value as manures for the crops to which they are applied, or to a much smaller degree to the succeeding crops; hence the effect of the cake feeding is pronounced in the first year, much less in the succeeding year, and then *nil*. After the second year the slowly acting nitrogen compounds that were derived from the straw and the undigested residues of the food are still coming into action, and continue to do so for many years before they are exhausted, but these effects, as they arise less from the cake feeding than from the other constituents of the manure, become alike for both kinds of dung. The general conclusion that we can draw is that cake feeding only adds fertility to the land for the first two crops grown with the manure.

2. Other Nitrogenous Manures.

TABLE III.—Yield from various nitrogenous manures over a period of four years.

	YIELD.—Total produce (unmanured plot = 100)			
	Year of application	1 year old residue	2 year old residue	3 year old residue
	Mean of 9	Mean of 8	Mean of 7	Mean of 6
Shoddy	139.7	125.2	116.1	106.7
Peruvian Guano	150.0	101.0	96.5	98.4
Rape Dust	136.2	100.4	100.0	94.4

The results obtained with the wool-waste, Peruvian guano, and rape dust are set out in Table III. A marked contrast exists between the first and the two latter of these manures. The shoddy or wool-waste evidently contains compounds of nitrogen subject to comparatively slow decay, so that its effect in the second and succeeding years is considerable, there being a distinct increase indicated in the fourth crop grown with the manure. Indeed the values yielded by shoddy compare very closely with those obtained with farmyard manure made from roots and hay only. It is a persistent manure that exerts in

the first year of application less than one-half of its total effect. Doubtless we should include in the same category all manures made from hair, fur, skin, silk, hoofs, horns, &c. ; and probably also the nitrogen compounds of bones.

Very different are the results yielded by Peruvian guano and rape dust. For both these manures the return in the first season is high ; they are well-known, indeed, as active and effective nitrogenous fertilisers ; but the experiments show that they leave no residue possessing any value for succeeding crops. Owing to the limited number of experiments, too much stress cannot be laid on the actual figures obtained—there is a possible error of 5 per cent. or so, and, moreover, some evidence exists that the check-plot figure, = 100, is somewhat too high for the plots in the guano and rape dust series, which are in consequence rated too low. However, we shall be justified in concluding that the nitrogenous residue from Peruvian guano or rape cake after a crop has been taken will give less than 10 per cent. increase in the second crop, and after that will be completely exhausted. (It should be noted that this statement applies to the nitrogenous part only of these manures, not to the phosphates they contain.) Now, the nitrogen compounds in question are, in the guano, ammonium compounds, uric acid and its derivatives, and some proteins ; in the rape cake, almost entirely proteins ; and it is a point of great importance in this connection thus to find that proteins are as active and as temporary in their action as ammonium compounds. Such a result is indeed intelligible, for the true proteins are readily and completely digestible, are equally easily attacked by bacteria, and pass thereby into ammonia and kindred bodies with great rapidity. We have other evidence from the Rothamsted experiments that the nitrogen in rape cake is, pound for pound, very nearly as immediately effective as the nitrogen in ammonium salts. The proteins thus fall into line with nitrates, ammonia, urea, &c., as compounds which produce all their effect in the season of their application, and leave little appreciable residue behind, in contrast to the collagens (the insoluble nitrogen compounds of wool, skin, bone, &c.) and the indigestible residues of food. With this distinction in mind we can roughly estimate the residual value of the nitrogen in other fertilisers—in cakes and seed residues it will be present in the form of protein ; in fish guanos it will be mainly protein ; in meat guanos protein and collagen ; the latter predominating the poorer the manure becomes, and the more it approximates to bone meal. Though these conclusions are based on experiments on the Rothamsted soil alone, it is one that would usually be considered retentive of manure, being both heavy and cool, fairly supplied with rain but not waterlogged.

3. The Phosphatic Fertilisers.

The following Table IV. shows on the same lines as before the results yielded by the three phosphatic fertilisers under trial :—

TABLE IV.—*Yield from phosphatic fertilisers over a period of four years.*

	YIELD.—Total produce (unmanured plot = 100)			
	Year of application	1 year old residue	2 year old residue	3 year old residue
	Mean of 9	Mean of 8	Mean of 7	Mean of 6
Superphosphate	116.2	109.6	113.8	107.8
Bone Meal	114.6	112.4	109.1	105.6
Basic Slag	114.5	110.5	104.8	112.0

These results are significant in two directions, one that the phosphatic manures persist in the soil and the residues exert an effect that is roughly proportional to the amount of phosphate unused, secondly, that superphosphate is as lasting a manure as either bone meal or basic slag. Neither conclusion can be said to be wholly unexpected or unjustified; it has already been shown that at Rothamsted the phosphoric acid contained in the superphosphate applied from year to year still persists in the surface layer in a state of combination soluble in dilute citric acid, and therefore readily available for the use of the crop. If then the soluble phosphoric acid of superphosphate is thus definitely arrested and kept in a valuable form there is no reason to expect any greater deterioration in the phosphates of bone meal or basic slag, which remain effective in so far as they have not been taken out by the crop. This conclusion is perhaps to be limited to a soil like that of Rothamsted, reasonably well furnished with carbonate of lime, so that the compounds formed in the soil by the soluble phosphoric acid will be mainly those containing lime. Returning to the original object of these experiments it is clear that the compensation to be paid for a dressing of phosphatic manure must be spread over a longer period than that given for most kinds of nitrogenous fertilisers.

Phosphatic manures are usually applied in considerable quantity; 1 cwt. of superphosphate will contain from 14 to 20 lb. of phosphoric acid, 1 cwt. of bone meal about 25 lb., and 1 cwt. of basic slag about 20 lb. of phosphoric acid, yet most crops do not remove more than 20 to 30 lb. per acre of phosphoric acid (mangolds up to 50 lb. per acre or more). Hence with the ordinary dressings we may assume that at least one half of the original value of the manure remains in the soil after the first

crop has been taken, and compensation to that extent should be given to the outgoing tenant, always assuming that the soil is one needing phosphatic fertilisers so that the original expenditure was justified. When phosphatic fertilisers are used on suitable grass land the scale of compensation should be even higher and should last for more than four years, because of the cumulative change wrought in the herbage as well as the actual phosphoric acid left behind.

CONCLUSIONS.

The facts already brought to light by the experiments upon the Little Hoos Field at Rothamsted may be summed up as follows. As regards farmyard manure we can distinguish between the nitrogenous compounds introduced by the consumption of cakes and other concentrated feeding stuffs, and the compounds derived from the straw and the undigested residues of such coarse foods as hay. The former will have an immediate effect on the first crop, and to a much smaller extent on the second crop, after which they disappear; the latter compounds act slowly, do not waste, and have a measurable value for many years, though for practical purposes we may neglect their action after the fourth year.

Among nitrogenous fertilisers ammonium compounds and nitrate of soda have no perceptible action after the first year; Peruvian guano, rape cake, and similar fertilisers containing proteins leave very little residue after the first year, and none after the second. On the other hand, nitrogenous fertilisers of the wool, hair, bone class are slowly acting and non-wasting, their effect may be expected to persist for at least four years.

Phosphatic fertilisers, even when soluble like superphosphate, do not waste in the soil, and their residues continue to be effective until they have been exhausted by the crops.

To one other point attention may be called, though it does not arise strictly out of these experiments. It is seen that the residues of active nitrogenous fertilisers are wasted; this wastage takes place in the winter, for soils in the autumn after the crop has been removed become very rich in nitrates, which usually disappear before the spring. Hence, especially in rich soils, there will be a great economy if before the winter the land can be occupied by a rapidly growing catch crop which will convert these fugitive nitrates, &c., into insoluble plant material, afterwards ploughed in to become available for another crop.

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SOME MINOR FARM CROPS. I.

I.—FLAX.

LINE AND LINSEED.

THE cultivation of flax as part of the agricultural practice of England is of great antiquity. It was probably introduced into this country by the Romans, who were conversant both with the cultivation of the crop and with the preparation of the fibre for spinning and weaving long before their occupation of Britain. It has been stated, too, on good authority, that home-made linen fabrics were common in England as early as the eighth century. Little reference to flax cultivation, however, is to be found in any official records until A.D. 1175. About this date we find flax included among tithable articles, so, presumably, the cultivation of the crop had attained to considerable dimensions towards the latter part of the twelfth century.

Some real advance in the management of the flax crop seems to have taken place during the reign of King Henry III. This was due to the immigration of a number of Flemish weavers who were induced to settle down and practice their art of weaving in England. It is believed by some writers that these people elected to settle in the fertile plain about Selby, in Yorkshire, where by their methods and example they improved the weaving industry and thereby increased the demand for better quality fibre. For some considerable period after this time the policy of the Government seems to have been to encourage this growing industry in every possible way.

The next noteworthy advance of which we have official record occurred in 1535, in which year an Act was passed (24 Hen. VIII., c. 4) making the cultivation of flax or hemp obligatory.¹ All persons holding tillage land were thereby compelled to sow at least one rood of flax or hemp for every

¹ It is worthy of notice that this statute of Henry VIII. enjoined the sowing of flax and hemp because of the great increase of idle people in the realm; an increase largely brought about by increasing imports, especially that of linen,

sixty acres of such land occupied. *Thomas Tusser*, who lived at that time, sings—

" Good flax and good hemp to have of her own
In Maie a good housewife will see it be sowne " ,

from which we may conclude that in the sixteenth century flax was probably grown on most farms, the fibre separation and subsequent spinning and weaving being carried out by the husbandman and his family in his home.

Thirty years later this law was made more stringent, a fine of five pounds being imposed on all farmers not growing at least one acre of flax or hemp for every sixty acres of land cultivated (5 Eliz., c. 5). We find that *Moryson* writing in Elizabeth's reign (see his "Itinerary," ed. 1617, III., 179), says that husbandmen wore garments of coarse linen cloth made at home, as also did their wives, and "in generall" their linen was coarse.

From time to time various other methods were adopted for increasing the area devoted to the flax crop; for example, in 1691 the tithe levied on this commodity was reduced, in 1712 a bounty was given on all exported British-made sail cloth, and laws were passed which compelled people to bury their dead in linen, or to pay a fine. It is not surprising, therefore, to find that at that time flax was grown more or less in all parts of the kingdom; indeed in many counties several thousands of acres of land were devoted annually to this crop.

Numerous towns and villages sprung up in these flax-growing districts in response to the requirements of the industry, and the names of such places as Flaxton (in Yorkshire), Little Steeping (in Lincolnshire), Retford (in Notts.), and Flax-Bourton (in Somerset), probably originated during this period of activity and serve to remind us to-day of the extent to which the flax industry was carried on in former years.

Although the bounty system did not remain long in operation, the area of land devoted to flax continued to increase when it was discontinued; so much so, indeed, that some twenty years after that form of encouragement had ceased there were, in some parts of the country, more than three times the number of acres under flax than formerly.

The introduction of cotton and the successful machine-spinning of that fibre reduced the English flax industry very considerably. About the year 1820 steam-driven flax-spinning machinery became commercially successful, but even this did not change the depressed condition of the industry very materially. Then, too, the high price to which grain advanced during the Napoleonic War period naturally induced the better farmers to grow the usual grain crops rather than flax. In

addition to their increased profits they were thus relieved of the necessity of engaging in the troublesome after-processes of retting and fibre separation, operations which, at that time, were conducted on primitive lines by the husbandman and his family. It appears therefore that British flax cultivation survived only in the hands of the less experienced farmers, a condition of things which almost of necessity meant that the quality of the fibre prepared was low. This probably explains how it was that British flax fell into discredit, and, while a diminishing quantity was grown in this country, the amount of fibre imported steadily increased. Furthermore, following the Treaty of Paris in 1856 and peace with Russia, large quantities of low grade fibre were imported into this country from Russia, and occasioned a further depression in British and Irish flax growing.

It must be observed also that improved methods were being practised in Holland and in Belgium, and these were closely guarded as secrets against the foreigner; in consequence the fibre from these countries coming to the British markets commanded more than double the price of the home-grown commodity.

Two other factors that contributed to the decline of English flax growing are worthy of notice. One was the centralization of the linen trade in certain districts only, thereby depriving many farmers of their local markets on which they depended for the disposal of their crop; the other was the increased cost of labour due to the high prices of food materials and the general prosperity (which, however, was largely fictitious) during the great French War.

A marked halt in this decline, however, took place in 1864, chiefly owing to the cotton famine, which made flax a more valuable commodity, but due also to the establishment of public or central retteries at which farmers could dispose of their flax straw, thus relieving themselves of the necessity of carrying out the troublesome after-processes of retting and fibre separation. This latter feature seems to have figured largely in the revival of the industry which took place during the ensuing ten years, and marked a new stage in the history of British flax.

A further step in the revival was the saving of the seed as well as the utilisation of the straw. It is clear from early writings that it was customary to make no attempt to save the seed from flax grown in this country, although the special merit of linseed cake as a cattle food was recognised at an early date. But owing to the prevailing practice of largely adulterating linseed cake British farmers were induced ultimately to follow the lead given by *John Warnes* about 1840, and harvest the crop, so that both the seed and fibre were

secured. Considerable importance became attached to this practice ; indeed, farmers began to grow flax as a *seed* crop in this country.

The term *flax* being used to denote the crop grown primarily for seed—*i.e.* linseed—as well as the crop grown primarily for fibre, it became customary to speak of the latter as a *line* crop. Certainly this term *line* is still used in Somerset and in Yorkshire, where flax growing on a considerable scale has not long ceased, and it seems desirable to retain the term to indicate the *flax-fibre* crop as distinct from the *flax-linseed* crop.

It is interesting to note that in 1870 the area devoted to flax growing in Great Britain was no less than 23,957 acres—the greatest area devoted to the crop in any year on record. About the year 1875 a succession of seasons adverse to flax was experienced, and this, together with the keen competition of foreign flax and other fibres on the English markets, and the high price of wheat at the time, caused many farmers to cease growing flax. In consequence, many of the flax factories at which the retting operations had been conducted were compelled to close down through want of support. Other factories, operating alone in a large district where there was little or no competition, failed to inspire the farmers with confidence that they were receiving fair treatment at the hands of the factory management. The flax mills which were established in 1876 at Long Melford continued in operation for some twenty years, and took large quantities of flax straw from the farmers of that part of Suffolk. The most prosperous factories, however, seem to have been situated in Yorkshire, at Selby and Staddlethorpe—these two together dealing annually with the crop from some three thousand acres.

Nevertheless, in company with the other few remaining retteries and mills, the quantity of flax dealt with each year decreased steadily and eventually about 1896 they too ceased operations. From time to time small attempts have been made to resuscitate the industry in this country, but owing to want of capital, or to lack of proper co-operation between grower and factory, or to other mismanagement, no success has attended these endeavours.

Although, as the following table shows, there has never been less than some 200 acres devoted to flax in this country, only quite a small part of this refers to the *line* crop. This is due to the fact that some farmers are now growing linseed for consumption on their own farms and the acreage is returned as being under flax. In Somerset and in Yorkshire, however, small quantities of flax are still grown as a line crop, the straw being dew-retted and disposed of locally.

Area devoted to flax in England and Wales and in Scotland in the years 1882 to 1910.

Year	England and Wales	Scotland
	Acres	Acres
1882	5,128	92
1883	4,208	109
1884	2,192	55
1885	2,449	41
1886	2,809	169
1887	2,802	900
1888	1,881	327
1889	2,295	80
1890	2,417	38
1891	1,791	10
1892	1,412	9
1893	1,249	9
1894	1,751	9
1895	2,002	21
1896	1,765	31
1897	1,416	3
1898	899	3
1899	475	1
1900	466	1
1901	636	4
1902	832	3
1903	920	5
1904	554	9
1905	437	4
1906	253	10
1907	359	13
1908	272	14
1909	293	2
1910	226	3

This, briefly, is the history of flax cultivation in this country in so far as the line crop is concerned.

AGRICULTURAL.

It has long been held that flax requires no special kind of soil as it flourishes well on any good medium land. Provided that the land be clean, its selection is of minor importance compared with its proper preparation prior to sowing the seed. Although it may be said that land which is clean and well adapted to the cultivation of barley is suitable for line, the best results are obtained where the subsoil is stiff—a good wheat bottom being eminently suited for the production of high-class fibre crops. Flax does well after wheat and wheat does well after flax; and the usual custom in England has been to grow line after a straw crop, although, not infrequently, it has found a place after clover, a practice which at the present time finds favour in Ireland. When the land is heavy and line follows wheat,

autumn ploughing is always regarded as of the utmost importance. When the soil is light it must be consolidated so that it will retain moisture easily and provide a firm seed-bed—a condition which is best attained by following with line after a root or green crop has been fed off by sheep. Great stress is laid upon the necessity of having the land deeply worked and firm, with but a shallow surface layer to cover the seed after sowing. This is of importance, because the line crop grows very rapidly—the growing period extending over some ten weeks only—and the most desirable conditions are those that cause this rapid growth to be both continuous and uniform ; a check during the development of the plant causing the fibres to become coarse and irregular.

It is no longer seriously maintained that flax is an exhausting crop in the sense that it draws more from the land than do other crops. However, owing to its rapid growth the plant requires its nutritive materials to be in an easily assimilable form. This means that flax is seemingly a crop that would respond readily to artificial manures, but such application can be made profitably only after a thorough knowledge of the manurial requirements of the crop and of the particular soil has been acquired, and it is to be lamented that little or no information of a reliable nature concerning this is available.

The selection of the seed for sowing is an important point, as it is very necessary to employ only the very best seed, choosing that which is bright, plump, and clean. The best plan is to choose one's seed merchant with care, so that one may be reasonably confident of getting the best quality seed on the market. From quite early times it has been the custom in England to procure seed for sowing from Riga and Pskoff direct, or Riga seed which has been grown for one year in Holland or Belgium—now known as "Riga Child." Such imported seed was formerly grown successively for some few years ; the custom being to mark off a portion of the crop each year and to allow that to mature more fully to provide seed for sowing the following year. The necessity for frequent change of seed seems to have come to the fore only during more recent years, the present custom being to make use of freshly imported seed each year.

In order to get a tall uniform crop, the quantity of seed sown per acre and the method of its distribution are important considerations. The quantity of seed sown varies from 2 to 2½ bushels per acre, although, when it is desired to obtain particularly fine fibre, as much as 3 to 3½ bushels of seed are used. After the seed-bed has been prepared, the seed is sown broadcast by hand or by means of a "fiddle," or it is distributed from a hand seed-barrow. Sowing should be done early

in the spring, as early as the land will permit. Usually it is possible to sow on light soils at the end of March or the beginning of April, whereas on heavier land it is seldom possible to get the seed in before the end of April. However, many varying influences have to be taken into account and only the farmer can say when his land is in a suitable condition for receiving the seed.

It has always been a common practice in some districts to sow "seeds" with the flax; the conditions seem to be specially favourable to the production of a good "seeds" crop, and little if any harm is done to the line. In Yorkshire, at the present day, the line crop is always regarded as the forerunner of good clover crops.

Seeing that the object in view is to raise a crop of great uniformity, it is of importance to have the seed bedded at a uniform depth, otherwise an irregular crop will result. To attain this end some farmers prefer to drill the seed so as to avoid the uncertainty of distribution and lodgement attending hand sowing. After sowing, the seed should be covered by lightly harrowing cross-wise, and then lightly rolling the seed bed.

Owing to the conditions of flax cultivation and the slender growth of the plant, the development of weeds is greatly favoured. It may be taken for granted, however, that line crops are grown only on relatively clean land, and that weeds have been reduced to a minimum by previous cultivations. For the production of the best results it is always necessary to go over the land to remove weeds of large growth such as thistles, docks and charlock, but it is doubtful whether the careful hand-weeding which is practised in Holland and Belgium would be profitable in this country. The weeding must be attended to quite early, when the line is only a few inches above ground, otherwise the crop will not only suffer by the presence of the weeds but will receive damage by trampling during their removal.

When once above ground the plants grow rapidly, especially if frequent showers fall during the month of June, when an increase of about an inch may take place during twenty-four hours.

There is no doubt that the value of the fibre is reduced considerably if the crop is allowed to stand in the field until the seed is ripe. Only when flax is grown as a linseed crop is it allowed to become fully ripe, the straw thereby being deprived of its oily sap, and the fibre losing in spinning quality, becoming dry and somewhat harsh. But, however this may be, there is no need entirely to disregard such a substantial asset as the seed represents. The most advantageous

course for the farmer to adopt is to grow the crop primarily for fibre and secondarily for seed, that is, to harvest his crop at a time when the seed is developed to the minimum for it to be of commercial value, so that the fibre may suffer as little as possible. It is everywhere agreed to be the best practice to harvest the line crop when the lower part of the stem begins to change colour from green to yellow, when about one-third of the stem has so changed and when the leaves to about half-way up the stem have changed colour and fallen. At this stage an examination of the seeds within the older capsules shows them to be just changing from a full green colour to a brownish tint: a change which is observed early in July, before the harvesting of the crops commences, a fact which stands much in favour of the line crop.

The value of the line crop depends largely upon the manner in which it is harvested. It is necessary that the stems be arranged parallel with one another in neat bundles. So far, no machine has proved capable of accomplishing this satisfactorily, so that it is necessary to pull the flax and to tie it into bundles by hand. Pulling is done only in dry weather and should be accomplished with all possible haste, because in the warm weather the ripening process proceeds rapidly. When pulled the plants are laid down evenly on the ground and are afterwards collected together and tied up into small sheaves by twisting a few of the stems round them just below the seed bolls.

In order to allow the after-ripening of the seed to take place the sheaves are stood upon end in clusters in the field, and are occasionally turned for some few days; or they are arranged in rows across the field, the object being to dry the crop completely before it is put into the rick or the seed taken off. The seed is removed from the straw by various simple devices. In some localities the method known as *rippling* is adopted. This consists of dividing the sheaves into bundles of convenient size and then drawing the top ends of the handfuls of straw through the teeth of a vertically placed iron comb, the teeth of which are too close together to allow the seed bolls to pass between. The collected capsules are subsequently passed between rollers or threshed by some form of flail. In Somerset, instead of rippling off the seed, the custom is to pass the top ends of the straw between the butt-ends of two revolving wooden rollers fixed at such a distance apart that the straw is practically untouched, and yet close enough together to crush the seed capsules and to free the seed without damaging it. One advantage of this method is that the capsules are separated from the straw and the seed threshed by one and the same operation.

FIBRE SEPARATION.

The valuable part of the straw—the fibre—is situated almost on the outside of the stem, where it forms a series of irregular groups or bundles which are held in position by a gummy or resinous material called pectose. Before the harvested straw can be utilised by the spinner in the customary way, these bundles of long fibres have to be isolated, and up to the present time this is effected most satisfactorily by allowing the stems to damp-rot—a process which is known as *retting*.

From the earliest times to the present this process of retting has been conducted either by submerging the stems in water or by allowing alternate dew, sunshine and rain to carry forward the decomposition of the pectose, which holds the fibres in position, until they can be readily detached from the woody part of the stem. These operations, known respectively as *water-retting* or *steeping*, and *dew-retting*, are still the most usual and most satisfactory means to adopt, and, as carried out to-day, present little departure from the methods adopted in mediæval times, except in the matter of certain refinements.

It has been mentioned already that about the year 1860 a number of central retteries were established in this country, some of which continued in operation until 1896. Although large quantities of straw were dealt with at these depôts, the custom remained in England of the farmer separating the fibre for himself by retting in pools or in pits containing water, or by dew-retting. At the present time water-retting is only rarely met with in Great Britain, although the disused retting pits which are frequently to be seen in Yorkshire and the eastern and south-western counties seem to indicate the prevalence of this method in former years. When the operation is undertaken it is conducted substantially on the lines adopted universally in Ireland and in certain other parts of Europe.

Retting pits are usually some 4 ft. deep and measure about 15 ft. by 6 ft., but they may vary in size considerably. They are not infrequently lined with "puddled" clay and filled with rain water. Into this the bundles of dry de-seeded flax straw are packed closely together and a light covering of straw or green foliage is placed upon the top, and upon this a few boards and some loose stones are arranged so as to keep the whole mass uniformly submerged during the whole retting period. Retting is generally carried out in August and the time occupied by the steeping is from ten to twelve days, but this depends upon the prevailing temperature, so that it is necessary to examine the submerged straw frequently. When the

adjudged point has been reached the bundles are carefully removed from the water, opened out, and either spread over grass land, or the bundles are several times divided and the smaller bundles so obtained are stood upon end to dry. When conducted with care, this method of getting rid of the gummy material gives a fibre of better quality than is possible by the method of dew-retting. The latter is a much slower process of achieving the same end, and necessitates spreading the stems thinly over the ground in regular rows where they are allowed to remain some six to ten weeks. During this period they are occasionally turned over so as to promote as far as possible a uniform decomposition. As might be expected from this treatment the fibre obtained is not of good quality; nevertheless, of the small quantity of line grown and treated in this country nearly all of it is dew-retted by small farmers, who carry out all the operations and finally dispose of the clean fibre at a very reasonable profit to themselves.

The straw after retting is dried and stored until opportunity offers of freeing it from the loosely adhering wood and preparing it for the market, which operations are usually carried out during the winter months. The method of cleaning the fibre which is still adopted in Somerset is hardly different from that practised in the Middle Ages, and consists in the first place in drying the retted straw on a horizontal frame erected at a safe distance above an open fire. This renders the woody part of the stems brittle so that by passing them between a pair of fluted rollers, called a *breaker*, the wood becomes broken into very small pieces, and may be removed to a large extent from the fibre by shaking. The final cleaning operation known as *scutching* is performed by taking the fibre in small handfuls at a time and holding it over an upright post and then beating, or striking, the long fibres in a downward direction with a hand blade made of thin wood. These handfuls of scutched fibre are then finished off at the ends by throwing over a hackling comb, and they are then loosely twisted and made up into bales for sale.

FLAX GROWING FOR LINSEED.

The seed from English grown flax finds a ready market in this country and, for some purposes, is preferred to the imported seed. Although it has been contended that British grown seed is not so rich in fat as the imported linseed, yet the results of analysis show that this is not the case, as can be seen from the accompanying table. The quantity of fat present approximates closely to the amount present in the seed imported directly from such linseed-growing regions as Argentina, South Russia, and Algeria.

Imported Mazagan Linseed	41 per cent.	English Mazagan Child	42-43 per cent.
" Steppe	" 39	" Steppe	" — "
" Pskoff	" 38	" Pskoff	" 40 "
" Plate	" 35-39	" Plate	" 38-39 "
" Dutch	" 37-38	" Dutch	" 37 "

Reference has been made already to the somewhat surprising fact that only comparatively recently has uncrushed linseed been used as a feeding stuff, and, prior to the advocacy of linseed feeding by *John Warnes* about 1843, uncrushed linseed was not considered at all as a food-stuff.

From that time until the present flax has always been grown to some small extent in this country as a linseed crop; the straw being used as a bottom layer in stock-yards and for ricks, for thatching and for paper-making and more recently the unretted straw from this crop has been used in the preparation of coarser twines. The quantity of linseed straw available, however, has always been small and, being produced from widely scattered areas throughout the country, it has received but little attention.

Since Stratton's experiments on linseed growing (1880-1882) some few acres have been grown in various parts of the country principally in the eastern and south-western counties, but no further serious attempt was made to grow flax for linseed as a farm crop for some years. When, however, the great advance in the price of linseed and linseed products took place towards the end of 1909 farmers once more turned their attention to the possibility of reviving linseed growing in this country. During the past three years the area devoted to this crop has increased nearly four times; the increase occurring mainly in Essex, Somerset, Suffolk, and Northamptonshire.

The requirements of the linseed crop seem to be almost identical with those of the line crop in so far as the preparation of the land is concerned, the elimination of annual weeds, and the time for sowing. When using the small variety of linseed it is usual to sow about $1\frac{1}{2}$ bushels of seed to the acre, but in the case of the larger seeded varieties, such as La Plata or Mazagan linseed, 2 bushels is a suitable quantity to use. The seed is shallow drilled, the rows being about 8 in. apart, on a seed bed having a fine tilth as in the case of the line crop, and, at an early stage of growth, the gross weeds are removed. Linseed is allowed to stand longer than line so that the seed may mature more completely. It is then either cut by scythe or machine, tied up into sheaves and allowed to remain in the field to dry. Farmers frequently separate the seed by passing the crop through an ordinary threshing machine, but as it is more difficult to remove the seed from the capsules than is the case with the usual grain crops, it sometimes has to be passed through the threshing machine twice.

A fairly good crop may be estimated to yield $\frac{1}{2}$ ton of linseed and $1\frac{1}{2}$ tons of straw per acre, but inasmuch as the return depends upon the variety grown, the treatment given to the land and to the crop, and also upon the weather, such estimated yields as the above must be accepted with diffidence until more definite information is acquired as to the best mode of raising linseed in this country.

There have been frequent requests for information relative to the growth of linseed in this country. Various kinds of linseed have been tried by private individuals; for example, the White Flowering Dutch Flax has been tried in Cambridgeshire, the large seeded African variety near Bury St. Edmunds, whilst some farmers have made use of the seed usually supplied for the purpose of raising crops of line rather than linseed.

During the past three years the University College of North Wales has encouraged the growth of small areas of linseed on a number of farms in their contributing counties, and concurrently with this work flax as a linseed crop has been dealt with at the South Eastern Agricultural College.

THE PROJECTED REVIVAL OF THE FLAX INDUSTRY IN ENGLAND.

The possibility of successfully reviving the flax industry in this country has been seriously considered by the Development Commissioners; indeed the revival of both the flax and the hemp industries was specifically mentioned in the Act of Parliament which brought that advisory body into existence. The first move made in this direction took place early in 1911, when the writer was appointed to obtain information and draw up a report on the possibilities of reviving the flax industry in this country. In this connection much first-hand information has been gathered during the past two years by studying the subject of flax cultivation and fibre separation in the principal flax-producing countries of Europe, namely, Russia, Holland, Belgium, France, Ireland, Austria, Hungary and Germany, and, in addition, certain field experiments have been conducted in Kent and in Bedfordshire where, besides raising line as a farm crop, retting experiments have been made in tanks specially constructed for the purpose.

The results of this enquiry leave no room for doubt that although good crops of line could be raised in this country, the troublesome and somewhat complicated operations of fibre separation do not fall properly within the province of the agriculturalist. Certainly they are much better performed elsewhere, since in the former case not only is there difficulty in obtaining the necessary labour at a time of year when it is in

greatest demand, but there is necessarily a lack of uniformity in the quality of the fibre produced. Strong reason was found for the belief that the judicious revival of the flax industry would be productive of benefit to British agriculture, and would afford people an opportunity of finding regular employment in rural districts by creating a new demand for skilled labour in those parts. There was found very reasonable foundation for the belief that the revival could be accomplished most satisfactorily by the establishment of central retting depôts in suitable districts to which the harvested crops could be sold by farmers, and at which the after processes could be conducted according to the most approved methods and thereby ensure greater uniformity in the quality of the resulting fibre.

The possibility of cultivating and separating the fibre at a fair profit to both farmer and factor cannot readily be decided, although the general evidence obtained is undoubtedly favourable to such enterprise. It was suggested that practical trials on a moderate commercial scale should be instituted as being the only way of obtaining the definite knowledge required as to the profitableness or otherwise of reviving the flax industry under present conditions. It was recommended that small retting depôts be established out of public funds in Yorkshire and in Somerset. Such establishments managed on strictly business lines for a few years would enable the required information to be gained. The possibilities opened up if the scheme proved successful were held to be ample justification for its serious trial.

The favourable manner in which these recommendations have been received by the Development Commissioners has led to the formation this year of a society, not trading for profit—The British Flax and Hemp Growers' Society—the principal object of which is to give effect to the recommendations above referred to by organising and carrying out the necessary practical trials on a commercial scale by means of a grant from the Development Fund. In addition to this, the collecting together of trustworthy information bearing upon flax and hemp culture and treatment, as well as the dissemination of such information, are among the other objects of the Society.

The programme of work entered upon this year may be divided into three parts, viz. : the growth and treatment of the line crop ; the cultivation of linseed ; and the isolation of improved strains of flax both for fibre production and for seed production. With regard to the first of these, arrangements have been made for the equipment of two central retting stations—one at Selby, and one near Yeovil ; and in these localities suitable areas have been devoted to raising flax as a line crop, so as to provide material with which to work out a

suitably standardised mode of fibre separation. In this connection, by reason of convenience, the Society is working in conjunction with the Leeds University in so far as this part of the scheme concerns Yorkshire. The work in connection with the growth of linseed has been delegated to the South Eastern Agricultural College, Wye; and it includes the arranging of trial plots in different parts of the country for the purpose of ascertaining the best variety of flax to grow for this purpose, the best cultivation to adopt, and the most suitable mode of harvesting and of disposing of the crop.

Attempts to isolate improved strains of flax for the more economic production of fibre and of seed are being made at the School of Agriculture, Cambridge, and at the South Eastern Agricultural College, Wye, from the various samples of seed which were collected by the writer from particularly good crops seen in the various countries visited. This work has not proceeded far enough at present to warrant anything very definite being said, although it does appear that plants selected for tallness and for shortness breed true to those characters, and the work generally offers no little promise.

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II.—HEMP.

THERE are many fibres known commercially as "hemp," most of which are native to tropical or semi-tropical countries. Among the common ones may be mentioned Manilla hemp, obtained from the leaf-sheaths of the non-edible banana, *Musa textilis*; Sisal hemp from *Agave rigida*, of which there are two varieties, *elongata* and *sisalana*, the latter being by far the more important commercially; two coarse Mexican fibres known locally as "pita" and "istle" or "Mexican Fibre," also obtained from species of *Agave*; Bowstring hemp from the leaves of several species of *Sansevieria*, one of the genera of *Liliaceae*; Phormium fibre or New Zealand flax or hemp from the leaves of *Phormium tenax*, another species of *Liliaceae*; Mauritius hemp from the leaves of *Furcraea gigantea*, a plant allied to the Agaves and belonging to the *Amaryllidaceae* (the natural order containing the snowdrop and the daffodil); Sunn hemp from the stems of *Orotalaria juncea*, a member of the *Leguminosae*; and true hemp which consists of the bast fibres of *Cannabis sativa*, a plant native to Western Asia and belonging to the stinging nettle family (*Urticaceae*).

Of all these only the last named, *Cannabis sativa*, has been grown in this country on a commercial scale as a fibre-bearing crop, and it is with this alone that the present article deals.

HISTORICAL.

The early history of hemp cultivation in England is very obscure. The introduction of the crop into Britain, like that of flax, was probably concomitant with the visits of Phœnician traders or with the Roman occupation of these islands, for both these peoples used hemp somewhat extensively for making cordage and nets. It is reasonably certain that prior to the tenth century coarse garments were made in this country from the fibres obtained from hemp and from nettles, and that during that period of English history when the manorial system obtained and the villages were self-supporting, the women folk occupied themselves in the spinning and weaving of these fibres into *hempen homespun*, just as the custom is in the remote parts of Russia at the present day.

Until the beginning of the fifteenth century very little information of interest concerning hemp cultivation in this country is to be found. In the manuscript "On Husbandrie," written by *Palladius* about 1420, hemp is frequently referred to; thus, under the month of February we find the following:—

"Last in this moone eke hemp is to be sowne
In dounge, fatty, playne, weet, and depe lande;
A foote of square in six sedes may growe"

In the writings of *Thomas Tusser* (1557) we find the account of September's husbandry includes the advice:—

"Now pluck up thy hemp, and go beat out the seed,
And afterwards water it, as ye see need"

"Some useth to water it, some do it not,
Be skilfull in doing it, for fear it do rot."

The cultivation of hemp, like that of flax, was made obligatory by law in 1535; the penalty for not growing it was increased in 1562, and it is interesting that in 1565 a fine of 10s. was imposed on Thomas Dawson for "breaking" his hemp, *i.e.*, separating the fibre from the bark, in his large open chimney on winter nights, a habit which the manor courts severely punished owing to the risk of fire, hemp refuse being very inflammable.

From these and other references it would appear that hemp was somewhat extensively grown in England at this time.

During the first half of the seventeenth century the agricultural conditions in England were at a very low level, and, in company with other rural industries, hemp growing declined and became restricted to certain localities only. The

close of the century witnessed the energetic appeals of Weston, Blith, Harthib, and others for a more extended system of husbandry, and the growing of hemp was among the improvements warmly advocated by these writers as being not only a remunerative crop but, in addition, one which affords employment to numbers of the rural population in the winter months.

These appeals finally resulted in the Government encouraging the industry in various ways. Thus in 1692 the tithe on hemp was reduced; in 1712 a bounty of one penny per ell was given on all British-made sailcloth; and in 1787 a bounty of 3d. per stone was allowed on all hemp raised in England, while later on duties were levied on all that was imported.

During the Napoleonic War period a remarkable development of the industry took place, the area devoted to hemp being extended very considerably. Thus, *Marshall* tells us that in 1803 there was a considerable quantity of hemp grown in Shropshire. In that county (and the custom was by no means confined to Shropshire) there was a small plot of ground, called the "hemp-yard," attached to almost every farmhouse and to many of the better sort of cottages. Whenever a cottager had 10 or 15 perches of land to his cottage, by growing hemp and with the aid of his wife's industry he was enabled to pay his rent.

During this period of revival the proper watering and preparation of the fibre for market were given marked attention. Retting pits were prepared and let out to hemp growers, and considerable premiums were paid to those successful hemp growers who were willing to instruct others in the methods of raising the crop and separating the fibre from the stem.

Following this revival came a decline which was almost as rapid, and which was mainly due to the unusually large imports of fibres which came into the country from abroad on the conclusion of peace. To take an instance recorded by *Ruegg* in 1854, there were not five acres of hemp grown in Dorsetshire in that year, whereas, at the close of the eighteenth century, the average area annually devoted to hemp in that county alone was close upon 250 acres.

The fen land of Lincolnshire and Cambridgeshire into Bedfordshire was, at that time, the chief centre of hemp growing in this country, and in this district similar depressed conditions obtained. Generally speaking the circumstances which affected flax cultivation exerted a similar influence on hemp growing, and at the present day, except in one small area, there remains little to remind us of the flourishing condition of hemp growing in England in the past except the disused hemp pits and the fact that on many farms certain

fields are still known as "the hemp field." In fact in the agricultural returns for 1907 hemp was not mentioned as being grown in this country.

An attempt was made in 1896 by the English Fibre Industries Co., Ltd., to revive the growth of hemp, and in the following year a large area was devoted to the crop in the Isle of Ely, but, although good crops were raised, no success attended the endeavour to separate the fibre at a central factory. This is to be attributed in large measure to want of knowledge and experience in carrying out the delicate after-processes of retting and fibre separation. It has, however, recently been demonstrated by the energy and initiative of a private individual that under present conditions of trade and labour by no means inadequate returns may be obtained by contracting with farmers of the fen country to grow hemp and then separating the fibre from the stems at a suitable centre.

In concluding this brief review of the history of hemp growing in England it must suffice to mention that this also is one of the sides of agricultural development which has been sympathetically considered by the Development Commissioners, and, as stated in the foregoing article, it is a matter which comes within the purview of the British Flax and Hemp Growers' Society. Although, at present, no definite scheme has been formulated, earnest endeavours are being made to come to some arrangement whereby the activity of the present existing hemp factory may be extended so as to embrace a larger area of the country.

AGRICULTURAL.

Hemp is a plant which seems capable of adapting itself to almost any conditions of soil and climate, and probably because of this fact there has arisen quite a number of different forms or varieties of *Cannabis sativa*, the species of hemp which is grown in Europe both for seed and for fibre. For example, the variety grown in Bologna and in Smyrna (sometimes known as "seed hemp") grows to a greater height than the usual form, attaining to some 12 or 15 ft., and carries more seed. From this variety, by cultivating for two or three generations in the fertile valley of the Loire, an improved form of hemp is raised, which is known in Italy as *La Canapa di Angiò*. Tuscany hemp, or "small hemp," which has slightly pink stems, grows to a height of some 4 to 6 ft., whereas Chinese hemp—or "giant hemp" as it is called—under favourable conditions attains to nearly 20 ft., resembling in this respect Indian hemp (*Cannabis Indica*), a variety from which the resinous gum known as *hashish* is prepared in the East. The Russian and Hungarian varieties which usually grow some

6 or 8 ft. high seem also to be distinct types, differing from the others in general appearance, in carrying a coarser bast fibre and in exhibiting an irregular habit of growth.

Hemp is nearly related to the hop and also to the nettle ; it is a dioecious species, the male and female characters appearing on separate individual plants. The male plant comes first to maturity, the female plant growing to a greater height and arriving at its maximum development some four or five weeks later than the male.

The best soil for hemp is a deep rich loam containing a good proportion of sand, so that it will keep open and work freely ; land such as may be found extending over a large part of Lincolnshire, Cambridgeshire and Suffolk being eminently suited to the crop. Although hemp does best in somewhat sheltered and moist situations—such for example as occur in the vicinity of rivers and streams—it does not thrive where the land is wet. It is considered a good plan to sow hemp on newly broken pasture and on warped areas. The most important factor in hemp cultivation, however, is to have the soil deeply worked, a fine tilth being very necessary ; indeed, it is claimed by many to be useless to sow hemp at all on land which is not in a very high state of cultivation. These conditions are obtained usually by ploughing the land in the autumn, cross ploughing it in the spring, and then by harrowing and lightly rolling it during the month of April as weather permits ; in this way the land is brought into condition just prior to sowing. A liberal dressing of old farmyard manure is given in the autumn, and, because the land cannot be too much enriched, phosphates and potash are frequently added in the spring.

It was formerly the custom for the grower to reserve a particular field of some five or six acres for hemp, an instance being recorded by Arthur Young, in his "Agricultural Survey of Suffolk" in 1797, of a field upon which hemp had been grown for seventy years in succession. This custom has long since been discontinued, and hemp now finds a place in the ordinary crop rotations. Unless the land is exceptionally rich any corn crop may be sown after hemp, although oats do best as they make less straw than wheat, and owing to the shade afforded by the hemp crop the land is not greatly troubled with weeds so that the following crop is at an advantage from this fact alone. In some districts—notably in Suffolk—the rotation followed has been wheat after fallow followed by sown grasses, hemp, and then oats ; or the manured fallow was followed by wheat, grasses, oats, and hemp. At the present time hemp is grown in Cambridgeshire where very good crops are obtained on the rich alluvial soil between Ely and Downham Market

by adopting such a three-course rotation as potatoes, hemp, wheat—hemp taking the place of fallow.

Very great importance is attached to the choice of seed, and it is essential to procure fresh seed only, which should be bright, heavy, and plump, possessing a slightly sweet *nutty* taste and brownish-grey colour. When the seed is dull and the outer shell cracks by lightly rubbing in the hand and the taste is somewhat bitter, the seed is old and will be of poor germinating capacity. Hemp seed is difficult to harvest and keep in good condition owing to the large quantity of oil which it contains and which soon becomes rancid, a fact which makes it almost imperative to sow only seed which is but one year old. It was formerly the practice in this country to save seed for the following year as is customary at the present day in Italy, Russia, Hungary, and elsewhere; later, however, better seed was procured from Riga than was saved from the home-grown crops, and at the present time the hemp crops which are raised in this country come almost entirely from seed imported from Southern Russia. Such seed is preferred to either Manchurian or Italian, since with the latter varieties the seed does not come properly to maturity in this country, and so a valuable asset is lost. With the Russian variety some eight or ten bushels of seed per acre may be obtained the value of which almost completely covers the cost of producing the crop.

The proper time to sow hemp is during the latter part of April or the beginning of May. The seed is either sown broadcast or is drilled, and then lightly harrowed in. The quantity of seed sown per acre depends not only upon the germinating capacity of the seed, but also upon the manner of sowing (drilling requiring less seed than broadcast sowing) and upon the purpose for which the crop is raised. If it is grown for the production of fine fibre suitable for spinning and weaving, upwards of three bushels per acre may be sown broadcast, the plants being subsequently thinned out by hoeing. When, however, the crop is for use in the manufacture of coarse articles such as cordage, one and a half to two bushels of seed per acre are found to be sufficient. After some four or five days have elapsed the plants make their appearance above ground and soon afterwards they must be thinned out by hoeing to about eight to ten inches apart, or to a greater distance if the crop is grown for cordage purposes.

At the present time hemp is drilled in precisely the same manner as wheat, two bushels being sown to the acre, and it frequently happens that no other cultivation is necessary than to remove the larger weeds, although sometimes the crop is thinned by horse-hoeing across the drills.

Hemp grows very rapidly; the male plants are always more forward than the female, and, early in August—some thirteen weeks after sowing—they may be distinguished quite readily from the female plants by their great profusion of flowers from which much pollen is shed, their more delicate growth, and from the fact that their leaves and stems assume a yellow colour and become faded whereas the female plants remain in full vigour. The early custom in this country was to remove the male plants at this stage before they became withered and useless, and to leave the female plants standing until the ripening of the seed was accomplished. Under these circumstances of double harvesting, the male, or *summer hemp* as it used to be called, was removed carefully so as to leave the female, or *winter hemp*, undamaged. After the earth and any rubbish had been knocked from the roots, the stems were made up into bundles, called *gleans*, which were then allowed to stand upon end for a short time to dry. These bundles were then collected together and the stems sorted into approximately equal lengths and then, when tied up into smaller bundles, they were ready for the next operation of separating the fibre.

It has been said already that the female plants used to be harvested some four or five weeks after the male plant; but this was not always the case. When hemp was commanding a good price and was used for spinning and weaving the finer kinds of canvas, both the male and the female plants were harvested together at the beginning of August. At the present day the entire crop is left until the female plants have fully matured, being harvested immediately after the ordinary corn harvest, when the crop is cut with a reaper and the seed taken off at the dépôt to which the crop is sent for fibre separation.

When, however, two harvests are taken the winter hemp is cut or pulled when the capsules turn brown and the lower seeds become firm and assume a dark grey colour. Great care is exercised to avoid loss of seed during the handling of the stems. After the root ends have been cleared of soil and undergrowth, the stems are made up into loose stooks and left to dry and the seed to ripen until the capsules can be rubbed easily from the stalks. It is necessary to protect the seed against attack by birds and this is very conveniently done by raking together the undergrowth and putting it as a light covering on the top of the stooks. When sufficiently dry the stooks are removed to a spread sheet and the seed threshed out by hand, and as soon as this is accomplished the stems are ready for the next operation, namely the separation of the fibre.

In some few cases hemp has been grown in this country primarily for the seed it bears, and, in this case, the seed was

sown in drills a yard apart. The male plants were removed and the remaining crop allowed to stand until September when it was cut and threshed after the manner described.

RETTING AND FIBRE SEPARATION.

Of the several ways of separating the fibre from the hemp stems none yield such high class fibre as the method known as *watering* or *retting*. This is a process of slow decomposition which allows the bast fibres to be separated from the stem by submerging the hemp in water for several days in a manner almost identical with that described in the case of flax. Although it must be said that no hemp is retted in England at the present time, it was of such common occurrence in the past, and the methods adopted in hemp growing countries at the present day are so similar to those practised formerly in this country, that it will not be out of place to describe briefly the manner in which this operation was carried out. Retting proceeds best if the water is soft and when it is stagnant, although hemp may be successfully retted in slowly moving streams. As soon as the male stems were made up into bundles, or the female stems had been threshed, they were removed to the retting pit—a deep hole, sometimes six feet deep and measuring some twelve feet square.

The bundles of stems were floated on the water and arranged parallel with one another, and across them a second layer of bundles was arranged, and so on, until a bed of hemp had been built up, which, when suitably weighted at the top, almost completely filled the pond. Sometimes stout posts were driven into the bottom of the pond and to these planks and beams of wood were tied so as to keep the hemp completely submerged; or a covering of sods was put over the top and upon these a substantial weight of stones arranged so as to achieve the same result. After seven or eight days had elapsed a bundle was withdrawn and, if the outside covering containing the bast fibres could be detached readily from the interior of the stem, *watering* had proceeded far enough. This being the case the weights and covering were removed from the hemp bed, the bundles rinsed in the water, and the clean stalks stood upon end in open stooks to dry.

Hemp was not always retted in this direct manner: sometimes the decomposition process carried forward in the retting pit was arrested at an earlier stage, and the bundles of stems were removed to some convenient grass land where they were opened and the stems spread in regular rows over the ground after the manner of dew retting flax. This so-called *grassing of hemp* lasted several weeks, and during this time

the stems were turned frequently so as to secure a uniform product. Sometimes the *watering* was entirely omitted; especially was this the case when dealing with the female stems. These were more frequently kept in a well-thatched rick until the following February when they were *grassed* in the manner described. When a stage in this process had been reached at which the fibre could be readily separated from the interior of the stem, and the stems were dry and brittle, they were gathered up and stored under cover until the fibre could be cleaned.

The final cleaning of the fibre and its preparation for market were performed in a manner very similar to that adopted with flax except that the implements used were more suited to the coarser nature of the material in that they were of heavier construction. The dried retted stems were passed between fluted rollers or drawn beneath a grooved lever which broke the brittle central part of the stems into small pieces without damaging the fibre. These pieces were then removed by a beating process known as *swingling* or *scutching*; small handfuls of the broken hemp being held over an upright post and then beaten in a downward direction with a wooden blade, or by some automatic device, so as to knock out the broken pieces of wood.

Various methods have been adopted for separating the fibre from hemp, one being to peel off the outside bark in ribbons while the stems are still wet from the retting pit, or the inside rod was withdrawn from the stem leaving the fibre in the remaining tube of soft bark. The fibre separated by these means was then beaten, washed, and dried. At the present time in England no attempt is made to decompose the resinous materials which hold the fibres to the wood: the retting process is entirely omitted. As soon as the hemp is dried in the field after being harvested it is removed to a *dépôt* where it is thoroughly dried, the seed is taken off, and the stems are then passed through *breakers*, the fibre being afterwards scutched automatically. The fibre prepared in this manner is known as "green hemp," and at present finds a ready market in this country.

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III.—SEED GROWING IN ESSEX.

EXTENDING along the main road from London to Colchester, from Witham to Marks Tey, and on either side from Tiptree to Coggeshall, a curious type of agriculture may be found. The village of Kelvedon is the centre of a flourishing seed-growing district. From May to September the eyes of a traveller along the splendid thoroughfare will be met with brilliant patches of colour, and men and women may be seen standing or kneeling whilst slowly carrying out minute operations of an unusual character. It may be that boys or women are picking the seed pods from a stetch of multi-coloured pansies, or a group of men in a stackyard are engaged in unloading turnip seed on to a rick cloth where it will be trodden from the straw by horses. It is pre-eminently a district where manual labour prevails, and where old-fashioned methods of culture are assiduously followed. Yet with these there is also a keen appreciation of progress, and a strong determination to make the most of the land.

The nature of the soil in the district varies from a strong clay to light gravels and rich loams. But all of it finds its distinct use amongst the varied crops that are grown. Some years ago much of it was derelict, and there is proof of what adaptability and enterprise on the part of the farmer may do for the agricultural industry in the fact that a farm which was taken rent free by one of the largest seed farmers twenty years ago was recently bought by him at the rate of 34*l.* 10*s.* per acre. The value of the land in the neighbourhood as indicated by recent sales is somewhere about 40*l.* per acre, though some agricultural land with a meagre road frontage has sold for 60*l.*

The seed-growing industry is followed by large and small farmers, small holders and allotment holders. The crops grown include seeds of farm roots, vegetables and flowers. Corn and grass are not excluded, but they occupy rather a small percentage of the land. On a farm of 1,000 acres, 150 are this year (1913) under grass, 28 under barley, 59 under wheat. Of the other 763 acres, 150 are under seed peas, grown for merchants; 200 are under mangolds, growing for seed; 50 under swedes, for the same purpose; and 50 under seed turnips. The remainder is taken up by crops of broccoli, cabbages, parsnips, celery, broad and runner beans, and some flowers, including one and a half acres of dwarf larkspurs, one and all of them being grown for seed. Peas for market are also grown occasionally, and maize, roots, and catch-crops whenever possible, are grown for the herd of milch cows which are kept to make the best use of the waste

products of the farm. When clover is grown the first crop is taken early for hay and the second crop is harvested for seed. On small holdings the crops are grown in much the same proportions, though flower seeds and the smaller sorts of vegetable seeds may assume greater relative importance than on the large farms. Also some potatoes and peas are grown for Covent Garden by the small holders. Two well-known firms of seedsmen in the neighbourhood make a speciality of sweet peas, both for seed and for cut blooms for the London market.

The small holders have practically equal advantage with larger farmers in the seed-growing industry, if the fact of higher rentals is excepted, and sometimes the smaller occupiers obtain an actual advantage, for men of known honesty and carefulness may obtain contracts for special stocks of seeds at profitable rates. The rents of many of the large farms range about 1*l.* per acre, sometimes less, often a little over, according to the distance from the woods, while few of the small holdings are let at less than 2*l.* per acre, and sometimes more than this sum is required for them. Allotments of less than half an acre are usually let at 6*d.* per rod. The ploughing on both the lighter and heavier soils can be done with two horses, the land being laid in "stetches" of eight furrows, or ploughed on the level system, according to the situation and the nature of the soil. There is no particular form of treatment with regard to cultivation or manuring, except that seed-growers always attempt to obtain a good supply of nitrogenous fertilisers. A good deal of stable manure is obtained from London at the rate of 5*s.* to 7*s.* per ton. Fish manure and "fifingers" (*i.e.*, Starfish) are also great favourites. When these are not obtainable nitrate of soda is used, but it is not looked on with great favour. For some crops superphosphate is also in demand.

There is no particular rotation, and there is no rule about succession of crops, except that swedes or turnips must never follow each other, either on the plant beds or in the fields. Mangolds are sometimes grown on the same plot year after year, especially on the plant beds, with complete success. Mangolds are grown on the heavier land. In reality, cropping is determined by the demand for seeds, and the necessity for separating crops to prevent inoculation. This year there was an unusually large acreage under mangold seed as the stocks were low. While contract growers were supplying merchants with seed at 25*s.* per cwt. during last winter it was selling on Mark Lane at 50*s.* The one imperative necessity in laying out land for crops is to take every precaution to prevent inoculation. Farmers of adjoining fields often have to come to an agreement as to what shall be grown on each side of the

fence, and it sometimes happens that one man cannot grow York cabbage seed on his land because his neighbour has taken a contract for Drumhead seed on his. A case recently occurred where one farmer planted a field of swedes unaware that a crop of giant rape was growing on the other side of a large hedge. Inoculation followed, and the swede seed was useless. The farmer lost his reputation as a seed-grower and the costs of a legal action with the damages awarded amounted to 400*l*. The strict necessity for honesty and care in the treatment of both plants and seeds led to the statement by a seed merchant: "I do not buy seeds, I buy men." And to ensure that the stocks of seeds are kept pure most of the merchants who have contracts with the buyers send out their own men to take the "rogues" (that is, plants not true to type) from the beds and the fields.

The main crops in something like their order of importance are mangold, swede, all varieties of cabbage, white and yellow turnip, parsnip, broad and runner beans, peas, parsley, celery, and other vegetable seeds in small quantities. Lettuce seed used to be grown in the district, but is now largely grown in Italy and California. Birds proved to be a great enemy to the crop, and it is stated that the rapidly increasing number of linnets may so reduce the profit on swede seed that the growth of this crop will have to be transferred to other districts. During last winter over 2,000 linnets were shot on one farm of 200 acres. Carrot and onion seeds are no longer grown in this neighbourhood as a general crop, though one or two patches of each were to be seen this summer. These, however, were special stocks sent out in small quantities by particular seed merchants. Onion seed is now grown on the sandy soils of Bedfordshire, where the crops are much heavier than in Essex, and a large quantity for the English market is grown in Italy. Carrot seed used to be grown in the Kelvedon district, but the growing demand for clean or "bearded" seed favoured Continental, especially French growers. It is difficult to remove the beard from English grown seed, whilst it is difficult to keep it on that of French origin. Radish seed is grown near the marshes on the Essex coast. Crops of swede, turnip and cabbage seed are also grown in the Fens of Lincolnshire where the yield is heavier than in the Kelvedon area. But the Lincolnshire crops are "frothy," and the seeds are not equal in keeping qualities to those of Essex.

Flower seeds are grown by allotment holders and large farmers alike. Amongst these are to be found in varying quantities, sweet peas, nasturtiums, wallflowers, larkspurs, godetias, candytuft, sweet-williams, single carnations, antirrhinums, Canterbury bells, mignonette, thyme, pansies, and

summer chrysanthemums. The last mentioned are a favourite food for birds, and they are attacked while the seed is in a green state, almost before the flowers have disappeared. On one farm of 1,100 acres, the farmer's Crop Book contained 328 plots, and many of these were flowers. On a small holding consisting of one field 17 acres in extent, there were no less than 20 plots, of which 7 were flower seeds.

The seed beds for growing plants are usually prepared in the spring and early summer. They generally consist of ridges, either on the stetches, or on the level ploughing. Mangold seed is sown in August, and the plants are transplanted into the fields in April. They are usually planted on ridges, of which there may be either three or four to the stetch according to the variety grown. The seed for turnip and swede plants is sown on seed beds in June and July, according to variety. The yellow turnip is the first to be sown. The transplanting of swede and turnip plants goes on from October to April, even through the month of January, when the weather is open. Cabbage seed is sown for plants in March and April, and the transplanting begins in July, going on through August and September. Parsnip seed is also sown in April, and the plants are moved to the fields in the autumn. This is the case too, with celery. Parsley takes too long to "start" when transplanted, so it is usually sown in the spring under a crop of broad beans, and after the beans are removed, stands through the winter till the seed harvest of the following summer. Some flower seeds are also sown for plants in the spring, and the plants are removed to the fields in the summer and autumn. Wallflowers are sown on the seed beds in April and transplanted from July onwards. But most of the flower seeds are sown on the ridges in the autumn, where they remain till the harvest. Sweet peas, godetias, nasturtiums, candytuft, pansies and larkspurs are grown in this way. The seeds are sometimes drilled, but are more usually sown by hand. In the latter case a "marker" is used, which just covers the stetch, having as many shares as there are ridges, or as the number of rows required. It is so arranged that the horse walks in the furrow, and thus treading is avoided.

Obviously, such an industry as this necessitates a large amount of manual labour. Plants of mangolds, swedes, turnips, cabbages, broccoli, celery, parsnips, wallflowers, sweet-williams, &c., must be singly "dibbed" in the rows or drills. On large farms this is all done by gangs of men working by the "piece." Four or six men usually work together, and are attended by two or three boys. The farmer is responsible for "drawing" the plants and taking them to the fields. He also provides the boys who do the "dropping" for the men. The whole of the harvesting is also done by hand. Mangold, turnip, and similar

seed is cut with the hook, and tied up in bundles with string. Many of the flower seeds are also treated in the same way, but where the plants are too small to be cut, as with larkspurs, they are pulled by hand and laid in small heaps. Some plants, such as pansies and candytuft, have to be treated with minute care. The heads of seed do not all ripen at one period, and they have to be pulled off separately. When female labour was plentiful it was customary to take the "king heads" or "crowns" from the parsnip plants by hand. But this is rarely done now except by small holders, the whole of the plant being left till all the heads are ripe.

The harvest period covers the months of July, August, September and October, yellow turnips and mangolds being respectively among the earlier and later crops. The yields vary immensely with the season and the seed-producing qualities of the varieties of plants grown. With cabbage, for instance, as the quality of the variety from the gardener's point of view increases, so also does the seed yield diminish. The better the quality of the head the less the percentage of plants which will run to seed. In this case the loss is not complete, because the cabbages which will not "run" are cut and sent to market if there is a good demand, otherwise they are generally fed to the dairy cows. An average yield of mangold seed would be from 10 to 12 cwt. per acre, though it sometimes happens that the actual yield falls to 5 or rises to 25 cwt. Swedes yield about 16 bushels on an average, and turnips run from 15 to 20 bushels per acre. Market cabbages yield from 5 cwt. per acre upwards according to quality. Drumheads yield from 7 cwt. to 1 ton. Parsnips yield 10 or 12 cwt. of seed per acre, and parsley yields up to 18 bushels. One of the most uncertain crops is celery, which may yield anything between 4 and 12 cwt. per acre. It is practically impossible to estimate the yield of flower seeds, and an estimate of the yield of peas and beans would be extremely misleading as there is a great variation in the yield of different varieties. Great care has to be taken with the separation of the seeds. Some varieties are thrashed by machinery. Others are thrashed with the flail, or trodden out on the rick-cloth or barn floor by horses. Others, again, are picked by hand.

The seeds are said to be grown "on contract" for wholesale merchants, many of whom have offices in the neighbourhood, but in practice no particular forms are used. The stocks of seed are issued by the merchants to the growers at wholesale prices. Sufficient seed is issued for planting a rood or fifty acres as the case may be, and the merchant promises to take either the whole or the bulk of the yield at a fixed price. Thus the merchant is assured of the supply of

his demands from his own stocks and the grower is assured of a purchaser for his product. A few plots of seeds are also grown by farmers and small holders for sale to merchants or on Mark Lane. These generally consist of scarlet runner beans, broad beans, and some varieties of peas, the type and quality of which can be judged from the seed itself. It is obvious that this system could not be used for mangold or swede seed, the inherent qualities of which can only be judged by a knowledge of the stocks from which it was grown.

The following are the general contract prices of one firm of merchants for 1913-14 :—Mangold seed, 25s. per cwt. ; swede, 15s. 6d. per bushel ; green turnip, 14s. per bushel ; peas from 10s. to 17., and nasturtium from 14s. to 18s. per bushel. Some of the small holders were growing at the following prices in 1913 :—Parsley, 12s. to 13s. per bushel ; parsnip, 18s. to 17. per bushel ; celery, 27. 5s. per cwt. ; wallflowers, 10d., 1s. 4d., and 1s. 6d. per lb. ; white candytuft, from 5d. to 8d., and coloured, from 1s. to 1s. 2d. per lb. ; scarlet sweet peas, 1s. per lb. ; scarlet runner beans, 12s. per bushel, and York cabbage, 27. 10s. per cwt. The prices are ruled by the stocks in the hands of the merchants, which affect to some extent the prices on the wholesale market, though on the whole contract prices are fairly stable. A slight general rise has taken place during the last four years due to the higher prices reached by cereals. Some farmers who did not feel comfortable in the seed industry returned to cereal farming and thus limited the field of production. Some seed corn is also grown in the neighbourhood, but the price realised only amounts to about 2s. per quarter over the ordinary market prices for grain.

Some idea of the capital and labour employed in this system of farming may be gleaned from the fact that the last annual balance-sheet and valuation on a farm of 1,000 acres revealed a working capital of 13,0007. On this farm sixty men are regularly employed and the average wage sheet is 567. per week. On another farm of 1,100 acres the labour bill for 1912 amounted to nearly 5,0007. Thus the number of men employed per 100 acres is far above the average, though the rate of wages paid is not high. The farmers show a keen desire to make practical use of scientific and mechanical developments of agricultural methods, and the nature of the industry demands that they should be alert and keen as business managers. These qualities and capacities are reflected in the maintenance of a large population on the land and the evident prosperity of the neighbourhood.

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No farmyard manure was used nor, contrary to the general practice, any green manuring. In the writer's opinion a rich soil produces too large a percentage of nicotine in the leaves for a smoking tobacco. For seed beds Mr. Keller's pamphlets advise six frames 6 ft. by $\frac{1}{2}$ ft. per acre, but the writer found that six champagne cases sawn in half, thus making twelve shallow trays, each tray having a surface of roughly two square feet, was sufficient for one acre. This necessitates pricking out later at the cost of 1s. 3d. per 1,000. The advantage of growing in trays is that the plants are stronger and better rooted, and much time is saved in watching and watering. The trays are sown at the end of February, and the seedlings are pricked out in April. Care should be taken to protect the seedlings when in the trays from sun and frost. The trays are kept under glass, but a fortnight before pricking out the seedlings should be gradually hardened. Leaf mould makes the best soil for the trays, as the seedlings can be most easily lifted for pricking out. The pricking-out beds should be well sheltered from sun and frost, a covering of canvas being often used.

By about the third week in May the plants should be $\frac{1}{2}$ in. high, and it is now time to plant out. This is done in rows 3 ft. apart, the plants being 20 in. from each other. Most growers "hill" their land, but at Methwold this is impossible owing to the "blow-away sand." Any plants dying should be replaced at once to ensure an even crop. The bottom leaves should be pulled off when the plant reaches 18 in. in height as this helps the plants by giving them air, and intertillage becomes easier. A good soil mulch should be kept throughout the growing period by hoeing, which will also keep down weeds—a most important point. All flower-buds should be removed as they appear, great care being taken only to remove the bud and not to nip any of the small leaves.

"Suckering" is the next operation, and this consists of removing "suckers" or side shoots. These grow so quickly that they require constant attention.

"Topping" is also important, and consists, as usually carried out, in breaking the plant ten or twelve leaves from the bottom, but the writer favours leaving fourteen leaves on each plant till a later date when he reduces them to nine or twelve. The reason for this is that through suckering and hoeing some of the leaves are bound to be injured.

Harvest comes about three and half months after planting out. Indications of ripening are "toughening" of the leaf, its corrugated appearance and change of colour. When ripe the plants are split to within 4 in. to 6 in. from the bottom. Then they are cut close to the ground, laid gently down, and left for

a few hours to "wilt." Wilting makes the leaf pliable and prevents injury from handling.

The plants are swung on sticks 4 ft. 6 in. long; six to seven plants to one stick. The plants on the sticks are taken to the barn and hung up as they are to cure.

The writer's barns are 30 ft. by 20 ft. by 20 ft. in size, this being enough for one acre; tier poles are arranged 4 ft. apart horizontally, and 4 ft. vertically, so that the $4\frac{1}{2}$ ft. sticks rest firmly on these. The sticks should be placed 9 in. apart. It is essential the barn should be well ventilated from top to bottom.

To ensure even curing it is best to fill one barn in a day. In the barn the leaf becomes yellow, and in damp weather a slight heat is required to prevent mildew, but no high temperature should be used whilst the leaf is changing colour, otherwise the tobacco will cure green.

The "Old Kentucky" method of curing was followed in 1911. This consists of lighting logs fires of oak in the barn, thus filling the building with smoke, the temperature varying between 40° and 70°. By this method curing took two months, but in 1912 the crop was cured by flues at a temperature of about 100°, and only took from two to three weeks after colouring. As soon as the mid-rib of the leaf is quite dry curing is complete.

The barn must now be thrown open to allow the leaves to soften, otherwise handling would be impossible. The plants should be then taken down and the leaves stripped off and sorted. The qualities are known as "middles," "tops," and "bottoms," middles being of the highest quality.

After tying the leaves into bundles or "hands," ten or twelve leaves to each hand fastened by one leaf, heaps are made about 4 ft. wide by 4 ft. to 5 ft. in height, extending as far as is necessary for the crop, with the butts placed outwards and the tips protected from the air. Each curing should of course be kept separate. The heaps must then be covered up and weighted, and the tobacco will soon begin to ferment. If overheating takes place during this "mellowing" process the heap must be unpacked and re-packed top to bottom, outsides to inside, and *vice versa*. The writer finds that it often improves the quality of the tobacco to open the heaps and unpack them two or three times. Mildew may take place in damp weather at this point. It is easily detected by the stems feeling moist followed by a musty smell. The heap will have to be opened and the leaves thoroughly dried before repacking. The whole of this process is known as "re-handling."

Nothing else remains but packing the leaves in bales, when they are sent to Bond. The cost of growing one acre works out as follows :—

Schedule showing actual cost per acre when ready to be manufactured.

	£	s.	d.	
2 Ploughings at 8s. per acre	16	0		Contracts.
2 Harrowings	4	0		"
Seed to pricking	5	0		
Coke	3	0		
Pricking out 1s. per 1,000	12	0		By contract.
Rent, rates, &c.	10	0		
Manure and spreading per acre	4	10	0	
Dibbing out in field	12	0		Contract.
2 Hoeings per acre	6	0		
Suckering and topping, 8 weeks at 3s.	1	4	0	1 girl to 2 acres.
Harvesting 1 man 9 days per acre.	1	7	0	
Carting 2 carts 1 day at 7s.	14	0		Contract.
Curing per acre	2	10	0	Labour and fuel.
Re-handling per acre	4	0	0	
	17	13	0	
Interest on Capital for buildings &c., per acre	4	0	0	
	21	13	0	per acre.

On a farm of 40 acres the outside cost including expert should be no more than 25% per acre from seed sowing to finished tobacco. On a smaller scale the cost will be proportionately more, and on a larger, proportionately less, but without expert or re-handling the cost would not be more than 16% to 17% per acre. In the writers' opinion a light sandy soil is the best soil to grow smoking tobacco; though he understands good results have been obtained from heavy soil when growing for Nicotine extraction.

"Blue Pryor" was the first variety to be grown and proved to be very satisfactory. In 1912 other varieties were tried, among which "Yellow Orinoco" was found to be the best, but its yield did not come up to that of "Blue Pryor."

This article refers entirely to Virginian tobaccos as grown on light sandy soil. The writer has tried Turkish but owing to the cost, the climate and the more delicate nature of the plant, he has for the present given up growing this variety. He found that wet seasons caused "brown spot" on the Turkish but did not effect the Virginian. The process of re-handling Turkish is entirely different from that described here for Virginian.

With the Virginian some of the best plants have been allowed to seed as stock for future seasons. The writer's intention is to devote his time to the varieties of Virginia, Orinoco, and Carolina, fully believing, as he does, that tobacco-growing under these circumstances is quite a profitable industry.

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2.—AT REDFIELDS, HANTS.

TOBACCO growing was commenced at Redfields in 1910, and it would perhaps be interesting to give here an extract of the soil analysis, which was carried out by Dr. Bernard Dyer :—

The soil as received contained about 5 per cent. of stones separable by sifting through a wire sieve having meshes $\frac{1}{4}$ in. wide.

The fine soil, when dried, has the following composition :—

Fine gravel	3
Coarse sand	42
Fine sand	30
Coarse "silt"	9
Fine "silt"	9
"Clay"	3
Carbonate of lime, organic matter, &c.	4
	<hr/>
	100
	<hr/>

From the analysis it will be seen that the soil is a distinctly "light" soil. However, "light" soils are not the only ones on which tobacco will grow, and grow well, as experiments have been tried on neighbouring farms with soils varying from Bagshot sand to heavy clays, and the growth has shown no appreciable difference. In each of the four years from 1910 to 1913 the plants grew most luxuriantly in spite of the enormous difference in the weather during these years; 1910 was very wet, 1911 exceptionally dry and very hot, 1912 very wet and cold, and 1913 an almost rainless summer. It should not be surmised from this that tobacco can be grown profitably everywhere; on the whole it likes a mild climate, and situations not very high above sea level.

The preparation of the land is very much the same as for cabbages; after the necessary cultivations, a dressing of farm-yard manure—20 loads to the acre—is applied, and in addition to this artificials are required, especially potash. Operations begin in March each year, when the tobacco seed is sown in seed beds and covered with frames, which will accommodate three to four thousand seedlings to each frame. This year (1913) 250,000 seedlings were planted out in May at Redfields, and 99,000 were sent to growers in various parts of England.

The seedlings are planted out in rows 2 ft. apart, 3 ft. dividing each plant, an acre thus requiring 7,260 plants. Two men and a boy should be able to plant 5,000 plants in a day of nine hours. Between the time of planting out in May and the harvest in August the chief operations are hoeing, "suckering" (removing side shoots), and "topping" (removing the seed heads). During this period the tiny plants set out at the end of May will have developed by the middle of August into handsome

plants, standing, when topped, 3 ft. high, with largest leaves measuring 40 in. by 20 in. The harvest, which begins in the first or second week of August, is an important stage in the cultivation of tobacco, the plants having to be handled with the very greatest care, as injury to their leaves lowers their value.

The plants are cut with an axe close to the ground, and are then speared on wooden laths—six to each lath—and carried to the air-curing sheds on specially constructed carts. Formerly, the plants were threaded on string, and then strung on bamboo canes, but the laths were found to be much better, and, further, they keep the plants from swaying. The air-curing sheds are built in sections 40 ft. long by 16 ft. wide, and have a total measurement of 808 ft. They are high enough to take four tiers of hanging plants, the lowest being about 8 ft. from the ground, and the whole is covered with waterproof canvas curtains. After six weeks or two months of this curing process, the plants are ready for removal to the “re-handling” shed, where the leaves are then stripped from the stalks, graded, and made into “hands,” each hand consisting of about twelve leaves tied round with a separate leaf. They are next subjected to a temperature ranging from 100° to 120°. The leaves at this stage are in a brittle state, and before they are in condition for packing they have to be placed in a steaming chamber, and the steam turned on for one to three minutes.

Before going into the cost of growing an acre of tobacco, it may be interesting to give a list of the varieties of tobacco grown at Redfields. The list also shows the acreage under each variety in the year 1913 :—

Variety	Acreage		
Blue Pryor	15	0	20
Manilla	1	0	20
Kentucky	3	0	27
Yellow Mammoth	0	0	32
Fredrichsall	0	0	21
Turkish	0	0	29
Red Burley	4	2	29
Sumatra	0	0	27
Dutch	3	0	12
Wisconsin	1	0	0
Gold Leaf	0	0	30
Irish Gold	0	1	32
Hester	0	0	29
Comstock	0	0	31
Various	0	0	13
	30	0	0

So far, Blue Pryor has proved to be the best variety at Redfields.

The cost per lb. on 15 acres yielding 22,400 lb. grown in 1912, works out as follows:—

Seed beds	·60 of a penny
Farmyard manure and spreading	·74 "
Preparation of land	·83 "
Shelter beds and sundry work	·86 "
Artificial manures	1·00 "
Planting	·12 "
Cultivation	·57 "
Suckering and topping	·12 "
Harvesting	1·09 "
Rent, rates and taxes	·30 "
	<hr/> 5·23 pence

5·23 pence per lb. equals 32*l.* 10*s.* 10*d.* per acre.

These charges are exceptionally high owing to the very wet summer.

Mr. G. H. Garrad, of Wye College, in his leaflet "The Growing of Tobacco for Nicotine Extraction," gives the cost as 27*l.* 2*s.* 6*d.* per acre, and the cost in Germany, according to the Journal of the Board of Agriculture for November, 1913, is given at 27*l.* 2*s.*

There is, in addition to this, the cost of re-handling. This, owing to inexperience and what may be termed initial expenses, was very costly, coming out at over 3*d.* per lb. for the first year. In America, it is done at about 1*d.* per lb., and this, allowing a yield of 1,500 lb. to the acre, would work out at 6*l.* 5*s.* per acre. Naturally, as the acreage increases the charge for re-handling per pound should decrease in like proportion.

The whole of the 1912 crop was sold at an average of 6*d.* per lb.

In the above figures no allowance is made for depreciation, but as tobacco growing in this country is quite a new venture it is very difficult to rightly apportion this charge. At Redfields, the re-handling sheds have been built at a cost of 1,500*l.*, and they are sufficiently large and fully equipped to re-handle one hundred acres of tobacco.

When fully at work, therefore, the depreciation on the buildings and interest on the capital would work out at 150*l.* per year. This on 100,000 lb. of tobacco, which is a moderate estimate for a hundred acre crop, would show a charge for depreciation, &c., of about one third of a penny per lb. Probably as time goes on the penny allowance for re-handling would cover this item.

So far, tobacco at Redfields has not been grown in rotation. It has been proved that it will certainly grow five or six years in succession on the same land, though it will probably be

found more economical to grow it in rotation. And again, though the crop at present has not been seriously attacked, it will no doubt in course of time develop various diseases of its own.

At the present date more than one hundred acres of tobacco are being grown in this country under the direction of the British Tobacco Growers' Society, initiated in November, 1912, which is itself under the auspices of the Development Commission. This Society is not trading for profit, but is a branch of the co-operative movement, and is affiliated to the Agricultural Organization Society. The scheme outlined by the Society and the Development Commission contemplates an experiment over a period of five years, at the end of which period it ought to be possible to speak with confidence as to the possibility of tobacco growing in England.

Each grower, under this scheme, receives the whole cost of the cultivation of the crop; this includes seeds or plants, sheds for air-curing, &c., and all expenses incurred for manures and labour, in fact, every reasonable item of expenditure except supervision. Beyond this the grower receives a bonus with a minimum of 5% and a maximum of 10%. All the wages paid are to be at the rate current in the district, and the manures used are to be applied as directed by the Society. The Society reserves the right to remove sheds after March 31 in any given year. An application to the Society for permission to grow tobacco in no way binds the applicant until the sheds are erected, and it is at the Society's discretion to approve or reject any application as they may think fit.

If approved, the crop becomes the property of the Society to be dealt with as they may determine. The area to be grown for the next few years will only be very limited, and the Society have to use the greatest discretion to avoid plots being taken up in districts unsuitable for the culture of tobacco, or at too great a distance from their re-handling centre.

The tobacco-growing industry in England, in the opinion of the writer, seems to be quite a feasible and profitable proposition. The greatest care, however, must be taken in placing only good and undoctored tobacco on the market or an almost irretrievable blow will be struck at this promising industry. At first only those who have the facilities for turning out a really good article should be allowed to grow this crop, as an immense amount of popular prejudice has yet to be overcome.

The Excise regulations are an exceedingly heavy handicap. An officer has to be present at all weighings and packings, and he is not always obtainable when required, which often means delay and expense. The officer further has to take samples

from packed and finished casks or bales, and this entails a certain amount of damage to the tobacco leaves which are then in a very brittle state, whilst it also does much damage to the casks and bales.

It is to be hoped that for the benefit of tobacco-growing in this country some drastic alteration in the present Excise laws will be effected in the near future.

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V.—TEAZLES.

THE growth of teasles for the purpose of cloth-dressing is a little known phase of agricultural industry, although a fairly large trade is done wherever woollen cloths are woven. The wild teasle is a common plant of the English copses and hedges with a tall, rigid, prickly stem, bearing large, spreading, opposite leaves, and conspicuous oblong heads. The flowers, which appear in July, are of a purplish colour and they are subtended by long, stiff, upright bracts. The plant belongs to the genus *Dipsacææ*, of which the scabious is also a member, and the teasle family is known as *Dipsacus sylvestris*. The difference between the wild teasle and the Fuller's teasle (*D. Fullonum*) is that in the commercial variety the bracts are *hooked*, and it is this quality which gives them their utility in raising the "nap" or "pile" of cloth. Fuller's teasle is probably a cultivated form of the wild species, although the contrary opinion is held in Somerset, and the local growers say that the wild teasle is a degenerate form of the cultivated variety.

Prior to the development of machine and power production in the woollen industry all cloth was dressed with teasles, but at the present time wire brushes are used for raising the "nap" on many varieties; teasles being mainly used on very fine cloths, and also on some cloths on which the nap is raised while the cloth is in a wet condition. In the latter case teasles have an immense advantage, for the damp, by causing rust, spoils the points of the wire brushes.

For the purpose of cloth-dressing the teasles are used in two ways. When they are sold by the growers they are graded in two or three sizes, *i.e.*, *kings*, the crown-heads of each plant, *middlings*, and *buttons*, *i.e.*, the smallest heads. The *buttons* are fitted into small iron frames which are fixed on large rotating cylinders, and these pass over the face of the cloth to be dressed. The *kings* and *middlings* are cut and fixed in small wire devices in sets of three. In this form they make a continuous cylindrical brush of some five or six inches in

length, and these brushes are fixed on the cylinder in a diagonal direction, in such a way that as the cylinder revolves each set of three teazles revolves upon its own axis.

Part of the superiority of teazles over the wire brush for the purposes of cloth-dressing is due to the fact that on each side of the many separate hooks on the heads are placed many more hooks so fine as to be almost invisible to the naked eye. Hooks of such fineness could not possibly be manufactured, and therefore the teazle is still grown for commercial purposes in many agricultural countries. The bulk of the English grown supply is produced in Somersetshire, but the crop is also grown to a small extent in Essex, and when grown and harvested under favourable conditions the quality of the Somersetshire teazles is such that they have no superiors, although large supplies are imported for the English cloth-dressers from France and Austria, and small supplies from the United States of America.

The soil and climatic conditions necessary for the cultivation of the plant, are a rich heavy clay soil, a copious rainfall at certain seasons of the year, and fine bright weather from July to the end of August. Should there be a continuous fall of light rain for a few days during this period a large part, or even the whole, of a valuable crop may be spoiled. On the other hand, sharp showers and bright sunshine are rather welcomed by the growers. The value of the teazle depends entirely upon the resisting power of the hooks. When the head is in a ripe condition the grasp of the hand is not sufficient to crush it, and if the base of a head on a standing plant is grasped in the hand with an upward movement the impression is generally nil. The hooks are rigid, the stems are tenacious, and as the plant sends its roots to a great depth the only effect is a test of the muscle of the arm of the person who attempts to remove the head of the plant. But if rain falls incessantly while the flowers are appearing in the heads, and water lodges in the interstices between the bracts, the head becomes partially or wholly rotten, and in either case it is useless. Such a summer as that of 1912 is disastrous to the teazle grower. On the contrary, in a fine season large numbers of heads are procured, and even if the supply should be excessive the heads can be stored for any length of time, provided they have been properly dried. But it is stated that the harvesting alone does not determine the rigidity and resisting power of the hooks, the nature of the soil also affects these qualities. The Somersetshire growers say that the heavier the soil the better the quality of the teazle, and they have an idea that some of the mineral constituents of heavy clays enters in a special way into the composition of the heads of the teazle.

The soil on which the crop is grown is usually a three-horse clay; or, as it is stated in Somersetshire, "any good wheat land" will grow them. Other growers have an idea that the crop need not be confined to the heaviest lands, and certainly it has been proved that the seedlings at any rate can be successfully raised on fairly light land.

The district in which the teazles are grown in Somersetshire is between Taunton, Chard, and Ilminster, especially in the neighbourhoods of Hatch, Curland, and Thurlbear. They are also grown to some extent near Langport. In Essex they are grown at Coggeshall. The area in which the crop is grown in Somerset coincides to some extent with the area in which the "teart" or "tart" pastures occur. The propensity for scouring cattle possessed by these pastures is notorious; and the "teartness" is supposed to be due to the peculiar physical and mechanical condition of these heavy clay soils.

The teazle is said to be "a two-year crop," but in reality it is matured in from sixteen to eighteen months in England and Normandy, and in ten months in some of the irrigated areas in the departments of Southern France. In Somerset the seed is sown on seed-beds at the end of March or the beginning of April. The exact period varies a little with the locality, but the general time for sowing is exactly the same as that for mangolds. On the heaviest land an attempt is made to sow at the end of March; on the lighter soils the sowing sometimes takes place at least a month later. The seed is usually sown by hand, either in drills or broadcast, but sometimes it is drilled with a bean drill, fitted with different rollers. The best growers consider that this is not a good method. About three gallons of seed per acre is usually sown, but the amount may vary from one to two pecks. It is usual to sow with seed about one-third of the land intended for the final crop, so that every acre of the seed-bed will yield sufficient plants to plant two other acres, whilst leaving an adequate number of plants for a crop on the seed-beds after the other plants are drawn.

There is no special place for the crop in the rotation. It may be grown both before and after wheat. The land for the seed-bed is winter ploughed and dunged, much in the same way as for mangolds. A good dressing of farmyard manure is generally used, but artificial fertilisers are occasionally applied both before and after the crop has been transplanted. Nitrate of soda and superphosphate are occasionally supplied to the seed-beds, and likewise to the plants in the second year during the months of April, May and June. The great necessity in the arrangement of the ploughing is to leave roads so that the cutters may move freely amongst the plants during the

harvest season. Consequently the land is usually ploughed in ridges of from eight to ten furrows. This leaves an open furrow on either side of each four or five rows. From May to August of the first year of growth the plants are worked by hand labour, being "spuddled" three times. The hoe is rarely used, but a small light spade takes its place. Spuddling through the plants three times usually costs from 2*l.* 10*s.* to 3*l.* per acre. One of the chief factors in success is the cleanliness of the ground, and the securing of loose soil round the plants. The looser the soil, so long as it is kept close to the plants, the bigger the "knot" at the bottom of the plant, and it is stated that the size of the "knot" determines the number of heads yielded by the plant.

The transplanting, at the rate of about 18,000 plants to the acre, takes place at the end of October or the beginning of November. If done in September or early in October fresh dry winds may cause the plants to shrivel, and they are unable to recover from this. After transplanting, the plants are left till the following spring, when during April, May, and June the ground is again subjected to three spuddlings at a similar cost. The harvesting begins during the early days of July and continues for six or eight weeks. Men and women go through the crop about three times, at intervals of a fortnight, taking the heads as they show signs of losing the flower. A short knife is used, and each head must be cut separately. When cut they are tied in small bundles of a dozen or less and then gathered and placed upon long ash or hazel poles to dry. During fine days these poles and their contents are placed in the sun; but should rain fall they are housed in a rough open shed where the wind can proceed with the drying process. The cost of cutting depends upon the yield, but the rate is about 7*s.* 6*d.* per pack of 20,000.

When the teazles are thoroughly dry they are taken from the poles and thrown in a heap in a dry place, and the sorting is proceeded with. During the sorting they are separated into two or three grades, as already stated, according to the desire of the teazle-merchant or of the cloth-dresser. When sorted the teazles are packed on "staffs," each holding 500, and forty "staffs" in Somersetshire constitute one "pack" of 20,000; but the number of heads in the pack varies. The Yorkshire "pack" only numbers 13,500, consisting of twenty-seven "staffs." The Normandy "pack" numbers 14,400, "or thereabouts." Before or after the grading, the growers are visited by merchants from Bradford and Leeds, who buy up the whole of the supply. It occasionally happens that a grower is unable to make a satisfactory bargain with the merchants, when he proceeds to sell his produce direct to the users. But this method of disposing

of the teazles is rarely successful for more than one year. Should the farmer be unable to find a purchaser amongst the manufacturers he is boycotted by the merchants, and is driven to sell at less than the current rates, or to keep his teazles in stock—a course apt to lead to financial embarrassment.

The price paid for teazles varies according to the quality and the yield. Within the last four years the prices paid by the cloth-dressers have risen as follows :—

NORMANDY TEAZLES.

Cut teazles, 50 mm. × 40 mm., from 15 <i>l.</i> 5 <i>s.</i> to 18 <i>l.</i> per pack of 14,400	
Middlings	from 6 <i>s.</i> 9 <i>d.</i> to 8 <i>s.</i> 0 <i>d.</i> per 1,000
Buttons	„ 4 <i>s.</i> 9 <i>d.</i> to 5 <i>s.</i> 9 <i>d.</i> per 1,000

While the growers of English teazles have received advances as follows :—

		£	s.	d.	
1909.	Best teazles	3	12	6	per 20,000
	Buttons	2	0	0	„
1912.	Best teazles	7	0	0	„
	Buttons	3	10	0	„

In Somersetshire a custom known as “growing to half” exists in the teazle industry. A farmer enters into an agreement with a professional teazle grower to provide special land and ploughing for the crop. The farmer may be paid for this at the rate of from 2*l.* to 5*l.* per acre, but 7*l.* is not infrequently paid for very prolific land. The seed is supplied by the grower, and all the subsequent expenses are shared equally between the grower and the farmer. When the crop has been sold and placed on rail the proceeds are shared equally between farmer and grower. The following is a farmer's record of such a transaction during the eighteen months April, 1908, to September, 1909 :—

EXPENDITURE.

	£	s.	d.
1908.			
Rent and ploughing for seed land 3a. Or 25p.	9	0	0
Working ground (spuddling) under plants 3a. Or. 25p.	9	3	6
Pulling and planting 117,000 plants for 6a. 2r. 8p.	9	15	0
1909.			
Working teazles three times, 6a. 2r. 8p. at 50 <i>s.</i> per acre	16	17	6
Cutting 54 packs at 7 <i>s.</i> 6 <i>d.</i> per pack	20	5	0
Tying 54 packs at 6 <i>s.</i> 6 <i>d.</i>	17	11	0
Outtaring and tying, 1 pack 5 staffs at 14 <i>s.</i>	16	0	
Expense loading teazles on rail		18	0
Rent of land for second year, 6a. 2r. 8p. at 45 <i>s.</i> per acre	14	14	9
Haulage of teazles from field to shed	2	17	6
	101	18	3
Extra expense, hauling plants from one farm to another			
10 loads at 7 <i>s.</i>	3	10	0
Total expenditure	105	3	3

RECEIPTS 1909			
Sales,	£	s.	d
20 packs of best teazles at 72s. 6d	72	10	0
14½ packs of small teazles at 40s.	29	0	0
12 packs 36 staffs at 72s. 6d.	46	15	3
7 packs 29 staffs at 40s.	15	9	0
Total receipts	163	14	3
Total receipts	163	14	3
Total expenditure	105	3	3
Total profits	58	11	0
Half profit for farmer	29	5	6
Average profit per acre			
3a. 0r. 25p. for six months			
6a. 2r. 8p. for one year			
9a. 2r. 33p.	2	18	8
Adding the profit which should have accrued in the absence of the expense in unnecessary haulage (per acre)	3	2	2

This must be regarded as clear profit, and three acres of the land were only occupied by the crop for six months. But there is no real reason why the farmer should not undertake all the obligations and reap all the profit from the crop. If the farmer who "grew to half" in the above instance had taken sole control of the enterprise his total profit would have amounted to 58*l.* 11*s.*, and the rate per acre to 5*l.* 17*s.* 4*d.*; or, with the addition of profit that was swallowed in this case by the normally unnecessary costs of production to about 6*l.* 5*s.* It must be noted that although the farmer received only 23*l.* 14*s.* 9*d.* to cover the rent and costs of ploughing of 9a. 2r. 33p. of land, he considered his teazles the most profitable crop of the year even when he received only fifty per cent. of the total profits.

There is also an occasional item of receipt which does not appear in this account. When the teazles are taken from the poles and thrown in a heap they lose a large amount of seed. This is now sold for bird-seed at the rate of 30*s.* per quarter.

The teazle is subject to several pests. During June and July of the first year of growth the plants are attacked by the "hopper fly" whose attacks on swedes and turnips are well-known. And at several stages of their growth the plants are often subjected to the attacks of the "leather jacket," the grub of the *daddy-long-legs*. During May and June of the second year mildew attacks the leaves of the plants if the weather is damp, and a green fly also attacks the plants, clustering round the joints and eating the covering of the stem. Then, too, if the weather should be very dry during the period in which the heads first appear

plants are subjected to what is known as "black-knot," which is a contraction of the joints and has the effect of reducing the yield of the crop considerably. The actual yield may vary between two and fourteen packs, but usually amounts to between seven and ten.

One of the drawbacks to the cultivation of the crop is that it is held to "draw" or impoverish the soil. This point is always in dispute, but it is certain that good yields of wheat can be obtained after teazles, although two crops of teazles are rarely taken from the same plot within a short period. So strong was the feeling that teazles impoverish the soil that many old Somersetshire leases contained a clause forbidding their cultivation, and a few farmers still suffer under the same restriction. But good farmers say that the only danger arising out of the cultivation of teazles is that the heavy clay land should be left unploughed for a long time after harvest, in which case it becomes difficult to break up. Further, they state that the plant sends its roots to a greater depth even than the roots of wheat descend, so that it feeds largely from the subsoil which is left by other plants untapped. The same prejudice, due to the alleged impoverishment of the soil, was also held against the cultivation of woad—another plant used in the woollen industry which used to be grown in Somersetshire. Many of the best growers state that the charge of impoverishing the soil is due partly to prejudice and partly to the mismanagement of the soil after the harvest, and that it has no other foundation.

For the purpose of improving the English stocks of seed some growers pursue the annual selection of heads from plants of a good type and prolific nature. But stocks of foreign seed have often been obtained from the English merchants, and used to good effect. This is seed which has dropped from the foreign teazles when they were in the warehouses of the English merchants.

It is stated by growers that imported stocks of seeds, especially American, are better than English, although the American stocks were derived from the English, the seeds for the establishment of the American industry being first exported from this country about the year 1840. The centre of the American teazle-growing industry is around the town of Skaneateles, near the city of Syracuse in the central part of New York State. Formerly they were grown there in large quantities, but of late years the acreage has diminished. In growth and quality American teazles are somewhat similar to Somersetshire, with the exception that on account of more favourable conditions at the time of harvest in America, and also that growers there house their products better during the

harvest period, they possess and retain a bright pea green colour, which is the natural condition of the teazle plant. On account of the high prices fetched by American teazles, it is not usual for them to come into competition with the English product for use in this market. Some years ago a well-known firm of American and English agents introduced into this country what was considered to be the strongest and hardest hooked teazles in existence. They were known by the name of "Oregon," from the State in which they originated, but being only suitable for special purposes, they seem to have gone out of use.

In France teazles are grown in a great many departments and districts in comparatively large quantities. The supplies for the English market are largely derived from the department of Vacluse in the south, and the department of Seine et Oise in the north. There is a vast difference between the two growths: the teazles from the north, being of much better quality, show better results in wear. Those from the south are more soft, and more of a wild nature, but in spite of that they are very useful for some purposes. On account of the system of artificial irrigation in the south great quantities are produced in the department of Bouches du Rhone and are harvested ten months after the seed is planted. Teazles from the north of France are very similar to those grown in Somersetshire, although not quite so strong. It is stated that there is a great increase in the acreage of the "Normandy" teazles.

Some teazles for the English market are derived from and around Lintz, in upper Austria. In appearance they look very well, and when well harvested they possess a nice pea green colour, but in quality and results they do not even reach the standard of those derived from the south of France. The prices for the Austrian products fluctuate a great deal, and on an average are lower than those ruling for the irrigated products of the south of France. Formerly, teazles were grown in large quantities in Austria, but of late years the acreage has greatly diminished.

There is always more or less fluctuation in the price of English teazles, and a great deal depends upon the quarter in which they are grown. The present rates are considered high. English growers are making even better prices than for similar qualities that come from the Continent.

The costs of producing teazles are higher than those for ordinary arable crops, and great care must be taken with the cultivation of the plant, and the harvesting and grading of the heads, but any good farmer who is prepared to give his personal attendance could raise good crops on a medium clay soil. There is no reason why the whole of the supply for the

English factories should not be raised in our own country. Over any period of years the books of any teasle grower would show a greater profit per acre than can be obtained from most farm crops, and the discrepancy between the prices paid by the consumer and those received by the farmer show that if the growers could organise their profits might be easily increased.

The following account of the teasle industry was given by John Billingsley in his Survey of Somersetshire in 1795 :—

“In the parishes of Wrington, Blagden, Ubly, Compton Martin and Harptry, teasels are much cultivated. The head of this plant, which is composed of well-turned vegetable hooks, is used in the dressing of cloth, and the manufacturers of Somerset and Wilts are for the most part supplied from these parishes. Large quantities are also sent (by water conveyance from Bristol) into Yorkshire. The most favourable soil is a strong rich clay, or what is generally denominated good wheat-land. Sometimes an old ley is broken and sometimes a wheat stubble. The seed is sown after the rate of two pecks per acre in April. During the summer the land is worked over three or four times with long narrow spades to destroy the weeds. In the month of November, if the plants are too thick, they are drawn out to fill up vacancies, and the plants are set at a foot distance. If, after this thinning, too many plants remain, another field is prepared, into which they are transplanted, but those plants which are never removed produce the best heads. At the next spring and ensuing summer the land is worked over three or four times with narrow spades, by which it is kept thoroughly clean, and the plants earthed up. This is called *speddling*.

“In the month of July the uppermost heads begin to blossom, and as soon as the blossom falls they are ripe. The gathering is performed at three different times. A man, with a knife made for the purpose, cuts the heads which are ripe, and ties them up in handfuls. After a fortnight he goes over the ground again, and at a third cutting the business is completed. On the day of cutting they are carried into a house, and if the air be clear, they are taken out daily and exposed to the sun, till they are completely dry, but great care must be taken that no rain falls on them. The crop is very hazardous. A wet season rots them, particularly when there is much rain at the time of blossoming. When dry the teasels are separated into three different groups, called *kings*, *middlings* and *scrubs*, and are after that, made into packs, containing of *kings*, nine thousand heads, and of *middling* twenty thousand. The scrubs are but of little value. The

average price is forty shillings per pack, and sometimes the produce is fifteen or sixteen packs an acre, at other times a total blank. There is an amazing inequality in the produce of different plants: some stocks will send forth one hundred heads, others not more than three or four. Should not great attention therefore be paid to the selection of seed, namely, by taking it from those plants which appear to be most prolific? This, however, is not done, but the seed is taken indiscriminately from the whole crop.

"As the goodness of the crop chiefly depends on the care taken to keep the land free from weeds, leaving the plants at proper distances, and earthing them up well, and as most of the common workmen will pay more attention to their own than to another's interest, it frequently happens that a partnership is formed between master and man. The former finds ground and ploughing, the latter seed and labour, at harvest the crop is divided and each party takes a moiety. The expense and produce of teasels may be thus estimated per acre:—

	£	s.	d.
Two year's rent	3	0	0
To ploughing	0	15	0
To workmen's labour	3	15	0
To making out bundles, tying together teasel bands, 2s. per pack	0	14	0
Total cost	8	4	0
By average produce, 7 packs at 40s., 14 0 0	14	0	0
Profit	5	16	0
	14	0	0

"The working with the spade can only be done to advantage by the men accustomed to it, who are become, by habit, so dexterous in the use of the implement, that they will even thin out a crop of carrots. The common hoe has been tried, and though in the hand of a competent turnip-hoeer, it was not found to answer.

"After the crop, wheat is sown on one ploughing, and seldom fails of a good produce, so it may not be quite fair to charge the teasels with two years' rent. Few soils will bear frequent repetitions of this crop, and the farmer finds it his interest to devote newly broken up land to this culture."

Thus it may be seen, that the system of growing teasels has remained almost exactly the same for over a century, while immense strides have been made in the development of some types of farming.

ARTHUR W. ASHBY.

CONTEMPORARY AGRICULTURAL LAW.

I.—LEGISLATION.

AGRICULTURAL interests are not greatly affected by the legislation of 1913, but there are some enactments which should be noticed.

The first of these is the Agricultural Holdings Act, 1913 (2 and 3 Geo. 5 c. 21). It was passed to avoid the effect of the decision in *Re Kedwell and Flint & Co.* (1911, 1 K.B., 797; 80 L.J.K.B., 707, noted on page 189 of Vol. 72, R.A.S.E. Journal), where it was held that the provision in Section 61 of the Agricultural Holdings (England) Act, 1883, that a tenancy from year to year current at the commencement of the Act should cease to be a tenancy "under a contract of tenancy current at the commencement of the Act" on the first day on which either landlord or tenant could, the one by giving notice to the other immediately after the commencement of the Act cause such tenancy to determine, must be read into the Market Gardeners' Compensation Act, 1895. The result of the case was that where land cultivated as a market garden was held under a yearly tenancy at the date of the commencement of the Market Gardeners' Compensation Act, 1895 (January 1, 1896), and continued to be held under the same contract of tenancy down to the present time, inasmuch as it might long since have been determined by notice to quit, it could not be treated as a tenancy current at the commencement of the Act so as to give the tenant the right to compensation conferred by the Market Gardeners' Compensation Act, 1895, upon tenants under such tenancies of a holding at that date in use or cultivation as a market garden with the knowledge of the landlord. It should be stated that the Agricultural Holdings Act, 1908, which repealed the Acts of 1883 and 1895, by Section 42, Sub-section 2, preserved the rights of tenants under tenancies current on January 1, 1896, but provided that where such a tenancy was a tenancy from year to year the compensation should be such (if any) as could have been claimed if the Act of 1908 had not been passed, thus making it necessary in such a case to revert to the previous Acts of 1883 and 1895 to ascertain the tenant's rights. This proviso is repealed by the Act of 1913, which declares that a tenancy from year to year under a contract of tenancy current on January 1, 1896, shall not be deemed to have been determined thereafter by virtue of any provision contained in Section 61 of the Agricultural Holdings (England) Act, 1883. The effect of the Act is to enable any tenant who continues to hold under a tenancy current on January 1, 1896,

and whose holding was then cultivated as a market garden with the knowledge of the landlord to obtain compensation on the termination of his tenancy for planting of fruit trees, fruit bushes, and the other various market garden improvements mentioned in the Third Schedule to the Agricultural Holdings Act, 1908, in the absence of any previous written notice of dissent by the landlord to the execution of such improvements, although the tenancy may be only a yearly tenancy which might have been determined within a year or two of the commencement of the Market Gardeners' Compensation Act, 1895, which first conferred special rights to compensation upon tenants of land at that date in cultivation as a market garden. The rights to compensation under such tenancies are therefore no longer governed by the decision in *Re Kedwell and Flint & Co.*

The Ancient Monuments Consolidation and Amendment Act, 1913 (3 and 4 Geo. 5 c. 32), should be noticed, as such monuments may be situated on land used for agriculture. It empowers the Commissioners of Works and county councils to purchase by agreement ancient monuments. The expression "ancient monument" includes the monuments specified in the schedule to the Ancient Monuments Protection Act, 1882, and any other monuments or things which in the opinion of the Commissioners are of a like character, and any monument or remains of a monument, the preservation of which is a matter of public interest by reason of the historic, architectural, traditional, artistic or archaeological interest attaching thereto, and the site of any such monument or of any remains thereof and any part of the adjoining land which may be required for the purpose of fencing, covering or otherwise preserving the monument from injury. Ecclesiastical buildings for the time being used for ecclesiastical purposes are, however, excluded. The Commissioners or county councils may with their consent be constituted by the owner of any ancient monument its guardians, and they then become liable for its maintenance. Provision is also made by this Act for orders of the Commissioners of Works placing any monument under their protection which is reported to be in danger of destruction or removal or damage from neglect or injudicious treatment, and it is enacted that the public shall have access to any monument of which the Commissioners or a local authority are the owners or guardians under regulations to be prescribed by the Commissioners or the local authority. There is also power given to local authorities to make bye-laws prohibiting or restricting the display of advertisements of such a nature or in such a manner as to be detrimental to the amenities of any ancient monument specified in the bye-law.

The Bankruptcy and Deeds of Arrangement Act, 1913 (3 and 4 Geo. 5 c. 34), by Section 18, restricts a landlord's power of distress in case of bankruptcy of a tenant so that the distress if levied after the commencement of the bankruptcy shall not be available for rent payable in respect of any period subsequent to the date when the distress was levied.

II.—DECISIONS OF THE COURTS.

1. *Labour*. Decisions under the Workmen's Compensation Act, 1906, have again been very numerous, but few of them have any bearing on labour in agriculture. *Knight v. Bucknill* (1913, W.C. Rep., 175) is an important case on the liability of an employer for an injury by accident to a casual labourer. A jobbing gardener was employed to cut down some trees at a daily wage of 3s. 6d. Subsequently he was employed to cut down other trees, and in the interval he was engaged in re-laying a lawn. After being employed for about five weeks, during which he worked every weekday except when the weather was too bad, he met with an accident while lopping branches from a tree. It was held that his employment was "of a casual nature" and that he was not a "workman" within the meaning of Section 13 of the Workmen's Compensation Act, 1906, which excludes from the definition of "workman" "a person whose employment is of a casual nature and who is employed otherwise than for the purposes of the employer's trade or business." The employer was therefore not liable to pay compensation under the Act. It is to be noticed, however, that the result would have been different if the employment had been for the purpose of the employer's trade or business (e.g. if the employer had been a timber merchant) even though it was of casual nature. In *Edwards v. Wingham Agricultural Implement Co.* (82 L.J.K.B., 998; 1913, 3 K.B. 596) a workman was employed as engine driver to work his employers' threshing machines at 6d. an hour. It was also his duty to go about a district allotted to him and look after the interests of his employers therein and was supplied with a bicycle for going to and from his work as well as for going from one part of his district to another. He ceased work each day at 6 p.m., and when on a distant job was not expected to return to his employers' works. On September 25, 1912, he had been engaged in working one of the employers' threshing machines and ceased work at 6 p.m. In the course of returning home on the bicycle he met with an accident, being run over by a steam lorry, and he sustained injuries which caused his death. His dependants claimed compensation. It was held that they were not entitled as the accident did not happen in the course

of the workman's employment, the Court stating that the protection given by the Workman's Compensation Act, 1906, to a workman does not extend to his going to and from his work unless there are some special circumstances. In *Bradley v. Wallaces, Lim.* (82 L.J.K.B., 998; 1913, 3 K.B. 629), the dependants of George Bradley, a teamster, claimed compensation for his death. Bradley, whilst engaged in his work at his employer's yard, was kicked and fatally injured by a horse which belonged to a third party and was standing there unattended. The employers admitted liability but claimed indemnity against the owner of the horse under Section 6 of the Workmen's Compensation Act, 1906, which gives a right to indemnity to employers paying compensation to a workman where some person other than the employer would be under a legal liability to pay damages for the injury. This claim was resisted by the owners who proved that the horse which caused the injury was not known by them to be vicious. It was contended that the horse had no right to be in the yard, and was, in fact, a trespasser there, and was left unattended through the negligence of the owner's carter, and that they were therefore liable for the results of the negligence. The Court held that the owner of a horse is not liable for an injury caused by the kick of the horse if it is not known to be vicious, and that the damage claimed was too remote, as it is not the natural or ordinary consequence of a horse, which has shown no vicious propensity, being improperly on land which does not belong to its owners, that it should when there kick human beings without provocation. The claim was therefore disallowed. It is to be observed that the defence which defeated the claim against the owners of the horse was not available to Bradley's employers in respect of the claim against them by his dependants because the latter claim being under the Act no question of negligence arose, and it was sufficient to show that the accident arose out of and in the course of the workman's employment.

Wolfenden v. Mason (11 L.G.R., 1243) raised a question as to the liability of a farmer and breeder of horses for payment of the duty imposed by the Revenue Act, 1869, Section 18, on "male servants," in respect of a man employed by him. Mr. Mason advertised for "a groom, single, to live in, able to ride and drive and make himself generally useful." He engaged a man at 8s. a week in addition to receiving board and lodging. The justices found that the man was employed by Mason in the capacity of a groom and general servant and that the major part of his duty was attending to horses kept by Mason in his business as a farmer and horse breeder and they dismissed the

information for employing a male servant without a licence. The Divisional Court affirmed this decision holding that the man was not a "groom" within the meaning of Section 19, Sub-section 3 of the Revenue Act, 1869, which defines "male servant" as meaning and including "any male servant employed either wholly or partially in any of the following capacities, that is to say . . . coachman, groom, postilion, stable-boy, or helper in stables . . . or in any capacity involving the duties of any of the above descriptions of servants, by whatever style the person acting in such capacity may be called." They considered that the major part of his duties being that of a farm servant, notwithstanding that in his capacity as farm servant he was continually attending to the horses and performing duties analogous to those of a groom, his employer was not liable to pay the duty in respect of this man.

2. *Stock*. In *White v. Steadman* (82 L.J.K.B., 713 ; 1913, 2 K.B., 537) it was held that the duty of a person who lets out a horse of known vicious propensity is the same as that which any person is under who allows others to use or come in contact with an animal or chattel that is dangerous in itself ; he is under a duty to warn not only the person who hires it, but any person who he knows or contemplates or ought to contemplate will use it. This duty is not dependent on, and is not created by the contract ; it exists independently of the contract and if neglected will subject the owner of the horse to a liability for damages for injury caused by its vice.

Two cases on cruelty to animals should be mentioned. *Waters v. Braithwaite* (30 Times L. R., 107) was a case in which an information was preferred against a farmer under Section 1 of the Protection of Animals Act (1 & 2 Geo. 5, c. 27) for causing a cow "to be cruelly ill-treated" in allowing her to be sent to market, according to a common but barbarous custom, overstocked with milk. The cow and her calf, which was muzzled, were sent to Banbury market, a distance of $5\frac{1}{2}$ miles from the farm. She was a heavy milker and in full milk, and on her arrival at the market at 11 a.m. her udder was found to be much distended. The teats were also distended and they were hard and hot and felt like the skin of a drum. Her back was arched, she had great difficulty in walking and had to be constantly struck to keep her moving. The evidence was that the cow had not been milked for 19 hours. The defence was that it was a well-known custom of farmers throughout the country to keep cows unmilked for a like period before offering them for sale, and that it caused no substantial pain, and that interference with the custom would be detrimental to farmers. The justices before whom the case came in the first instance found that the udder was

overstocked and that the cow suffered pain, but as it was an old established custom in the district to expose cows for sale in this condition they dismissed the summons. The Court of King's Bench, before whom the matter came on a case stated, held that where unnecessary suffering is caused to an animal by the owner an offence is committed against Section 1 of the Protection of Animals Act, 1911, even if the act is done in pursuance of a custom and for commercial reasons. They therefore remitted the case to the justices with a direction to convict. Darling, J., in the course of his judgment, said: "The case proved that the pain was unnecessary so far as the cow was concerned, and the respondent did cause unnecessary suffering by omitting to have her milked, or preventing her from being milked by muzzling the calf. If the custom of doing this did exist it was time it ceased, and people must find some other means of judging whether a cow was a good milker or not."

North Staffordshire Railway v. Waters (30 Times L.R., 121) was another case where cruelty to animals was charged. On February 5, 1913, eleven cows were brought to Uttoxeter Station on the North Staffordshire Railway for conveyance to Wolverhampton and were put into a railway truck. They were in a manifestly wretched and emaciated condition, and some of them were diseased. On their arrival at Stafford two of the cows were found to be dead and four others were dying and had to be shot. Five of these were tuberculous and the disease was of long standing. It was said that when received at Uttoxeter the cows were, owing to infirmity, disease or exhaustion, quite unfit to be carried by rail at all and could not be so carried without unnecessary suffering during transit, but although the attention of the railway company's servants was admittedly drawn to their condition, they took no steps to satisfy themselves that the cows could be carried without unnecessary suffering. The prosecution was under Clause 12 of the Animals (Transit and General) Order, 1912, made under the Disease of Animals Act, 1894, which is as follows: "No animal shall be permitted by the owner thereof, or his agent, or any person in charge thereof, to be carried by railway if owing to infirmity, illness, injury, fatigue, or any other cause it cannot be carried without unnecessary suffering during the intended transit by railway." The owners of the cows were convicted of an offence under this Order, and did not appeal. The railway company were also prosecuted and convicted by the justices, and an appeal to Quarter Sessions was dismissed. When the case came before the King's Bench Divisional Court the appeal of the railway company was allowed on the ground that the Order in saying "permit to be carried" did not mean

the person actually carrying, nor was the company the "person in charge" within the Order. No offence had therefore been committed by the railway company.

Catchpole v. Minster (30 Times L.R., 111) was a case of a different character. The action was brought by the plaintiff, a farmer in Sussex, against a taxicab proprietor to recover damages for injury done to three sheep belonging to the plaintiff owing to the alleged negligent driving of the defendant's taxicab. On November 6, 1912, at 5.30 p.m. the plaintiff's drover was going along a high road in charge of 100 sheep. He was accompanied by a dog which was behind the flock while he was walking in front. It was dark, and the sheep were kept as much as possible on the near side of the road. According to the plaintiff's case the defendant's motor cab, which was travelling in the same direction at a rapid pace and on the wrong side of the road, ran into the sheep and injured three to such an extent that they had to be killed. The plaintiff was non-suited by the county court judge on the ground that the accident was solely due to the negligence of the plaintiff's drover in taking a flock of sheep along the high road at night without carrying a light. The Divisional Court ordered a new trial on the ground that the decision of the county court judge was wrong. It was held to be an erroneous view that a person driving sheep on a high road without a light was guilty of negligence and had therefore committed a breach of duty.

3. *Landlord and Tenant.* The relations of landlord and tenant were the subject of several decisions in 1913. *Re Bonnett and Fowler* (82 L.J.K.B., 713; 1913, 2 K.B., 537) is a very important case under Section 11 of the Agricultural Holdings Act, 1908, which gives a tenant a right to compensation for disturbance if (a) his tenancy has been determined or a renewal thereof is refused "without good and sufficient cause, and for reasons inconsistent with good estate management," or (b) if it is proved that an increase of rent is demanded, and that such increase was demanded by reason of an increase in the value of the holding due to improvements which have been executed by or at the cost of the tenant and the demand results in the tenant quitting the holding. The tenant Bonnett received notice to quit for the sole reason as found by the arbitrator that he refused to pay an increased rent of 10s. an acre demanded of him, and the holding had been relet by the landlord to a new tenant at the increased rent demanded of Bonnett. It was also found by the arbitrator that Bonnett had, during his tenancy, improved the condition of the land by continuous high cultivation and had also made certain small improvements at his own cost for which he

would not receive compensation from the landlord, but that this increased rent was not proved to have been demanded by the landlord by reason of an increased value of the holding resulting from the improvements made by Bonnett. Bonnett claimed compensation for disturbance either under clause (a) or clause (b) of Section 11. It was held by the Court of Appeal that a notice to quit in order that a higher rent may be obtained is a "good and sufficient cause," and is not a reason "inconsistent with good estate management" within the meaning of Section 11 (a) of the Act, and excluded the operation of the section giving the tenant a right to compensation for disturbance under clause (a). The Court approved of the observations on this point of Lord Dunedin in the Scottish case of *Brown v. Mitchell* (1910, S.C., 369), which is referred to on pp. 131 and 132 of Vol. 71, Journal R.A.S.E., where he said that the meaning of the Act was "to give compensation for what may be characterised as capricious disturbance on the part of the landlord in capriciously putting an end to the lease." It was also held that the burden of proof *prima facie* lies on the tenant under Section 11 (b) of the Act to show, where an increase of rent has been demanded, that such increase was demanded by reason of an increase in the value of the holding due to improvements executed by or at the cost of the tenant, for which he has not either directly or indirectly received an equivalent from the landlord, and that such demand has resulted in the tenant quitting the holding. As the arbitrator had found that this had not been proved the tenant's claim for compensation for disturbance also failed under Section 11 (b).

The Scottish case of *Taylor v. Steel Maitland* (1913, S.C., 562) is important on the question of compensation for market garden improvements, as the wording of Section 42 of the Agricultural Holdings Act, 1908, corresponds with Section 29 of the Agricultural Holdings (Scotland) Act, 1908, which deals with the rights of tenants of market garden holdings in Scotland. The tenant held under a lease current on January 1, 1898 (which corresponds with the date January 1, 1896, mentioned in Section 42, Sub-section 2, of the English Act), a holding then cultivated in part as a market garden to the knowledge of the landlord, and therefore under the terms of the Act became entitled under Section 29, Sub-section 2, of the Act to claim compensation for the market garden improvements mentioned in the Third Schedule of the Act if he had "then executed thereon without having received previously to the execution thereof any written notice of dissent by the landlord any improvement comprised in the Third Schedule to this Act . . . as if it had been agreed in writing that

the holding should be let or treated as a market garden." He claimed compensation for a forcing house erected by him in 1902 for the production of early rhubarb and for rhubarb stools left in the ground. It was held by the Court that "then" in the above section meant "thereafter," following the decision of the House of Lords in *Smith v. Callander* (70 L.J.P.C., 53; 1901, A.C., 297), and that the tenant therefore would be entitled to compensation but for a letter from the landlord's factor written while the forcing house was in course of erection which the Court held to be a "notice of dissent" within the section in so far as the improvements claimed were in contravention of the lease. The tenant had not cultivated the whole of his farm as a market garden, but annually kept fifty acres not always the same fifty acres under such cultivation. It was held (Lord Johnston dissenting) that the fact that the ground cultivated as a market garden had varied from time to time did not prevent the fifty acres under cultivation at the expiry of the lease from being a "market garden" within the meaning of Section 29 of the Act for the purpose of a claim for compensation for improvements.

In *Re Pemberton and Cooper* (107 L.T., 716), the tenants of a farm in Kent upon which they maintained a flock of sheep proposed, after receiving notice to quit from the landlord, to plough up certain land laid down to grass by them many years previously and to plant corn thereon. The landlord obtained an interim injunction until the trial of the action restraining them from so doing, accompanied by an undertaking that he would abide by any order which the Court might make as to damages in case the Court should thereafter be of opinion that the tenants had sustained any by reason of the interim injunction having been granted. At the trial of the action the Court held that the tenants were entitled to plough up the land and consequently an inquiry was directed as to the damages sustained by them in consequence of the interim injunction, which compelled them to keep the land in grass. The tenants had kept their sheep on the land, and in consequence of the dry season of 1911 the sheep became depreciated in value. They claimed as damages (1) the net profit they would have made if they had ploughed the land and planted corn, (2) the amount by which their sheep had deteriorated in value. The arbitrator to whom the question of damages was referred found that the net profit under (1) would have been 533*l.*, and the deterioration under (2) was 101*l.* On a case stated for the decision of the Court, it was contended for the landlord that the damages under head (2) were too remote, and could not be recovered. Bankes, J., before whom the case came, held that the loss under the second head was in the contemplation of the

parties and a natural consequence of the landlord's action and not too remote. The tenants were, therefore, held entitled to recover both the 533*l.* and the 101*l.*

The right of a tenant to deduct landlord's income tax from his rent arose in *Re Sturmev Motors, Lim.* (82 L.J., Ch., 68 ; 1913, 1 Ch., 16). It was there held that a tenant is entitled to deduct sums paid by him in respect of such income tax from his rent, although since the payment he has made a payment of rent without making any deduction. It is not necessary to make the deduction from the next payment of rent which falls due.

Thuff v. Drapers Co. (82 L.J.K.B., 174 ; 1913, 1 K.B., 40) related to the payment of tithe rent charge. It will be remembered that the Tithe Act, 1891, imposed the liability for tithe rent charge exclusively on the landlord, and enacted in Section 1, Sub-section 1, that "any contract made between an occupier and owner of lands for payment of the tithe rent charge by the occupier shall be void." A tenant by his lease, in addition to the rent, agreed to pay "such further and other sums of money as they (the landlords) shall from time to time expend for the insurance of the said premises from loss or damage by fire as hereinafter mentioned, and for all tithe or tithe rent charge or modus or other payment in lieu of tithe." It was held by the Court of Appeal (Buckley, L. J., dissenting) that Section 1, Sub-section 1, of the Tithe Act, 1891, is not limited to a contract between an occupier and owner of land for payment of the tithe rent charge by the occupier to the tithe owner, but extends also to a contract between an occupier and owner of lands for payment by the former to the latter of such sums as the latter shall expend in payment of tithe rent charge to the tithe owner. The landlords, therefore, in the present case were disentitled to recover from the tenant a sum of 99*l.* paid by them in respect of tithe rent charge.

In *Re De la Warr's (Earl) Cooden Beach Estate* (82 L.J., Ch., 174 ; 1913, 1 Ch., 142) it was decided that capital money arising under the Settled Land Act, 1882, may not be expended in paying compensation to an agricultural tenant from year to year under the Agricultural Holdings Act, 1908, on terminating his tenancy, even though the tenancy is terminated in order to effect a duly authorised improvement under the Act consisting of a golf course. A tenant for life who desires to make such improvement must pay the compensation out of his own moneys.

4. *Produce.* There have been several cases in the past year dealing with the sale of milk. In *Plowright v. Burrell* (82 L.J.K.B., 571 ; 1913, 2 K.B., 362) the Dairy Supply Co., Lim., agreed to supply a retail dealer with the whole of the new

milk required or used in connection with his dairy, amounting to an estimated quantity of sixteen barn gallons daily. The agreement contained the following provision: "The Company hereby warrant each and every consignment of milk delivered under this contract to be pure genuine new milk with all its cream according to the conditions of the Food and Drugs Act The Company take great precautions to obtain a supply of pure milk with all its cream and to deliver the same in that condition to the buyer. It is therefore agreed that no responsibility is taken by the Company after delivery other than under the Food and Drugs Act, and that for all other purposes the buyer must satisfy himself at the time of delivery that the milk is sweet, sound, pure and contains all its cream, and if the milk is accepted by the buyer he shall not be entitled to make any claim for compensation, damages or costs upon the company afterwards in respect of milk which shall have been accepted by him under this contract." The dealer sold certain milk in the same state as that in which he purchased it from the Dairy Company, and as on analysis it was found to be deficient in fat, proceedings were taken against him for selling to the prejudice of the purchaser milk which was not of the nature, substance and quality demanded. The dealer contended that the agreement under which he purchased the milk constituted a written warranty within Section 25 of the Sale of Food and Drugs Act, 1875, and that he was entitled to the protection of that section. The magistrate was of opinion that the agreement was so qualified as not to amount to a written warranty within Section 25 and he accordingly convicted the dealer. On appeal it was held that the conviction was wrong as the agreement constituted a written warranty within Section 25.

In *Marshall v. Skett* (11 L.G.R., 259; 108 L.T., 1001) proceedings were taken under Section 6 of the Food and Drugs Act, 1875, in respect of a consignment of milk from a farmer, and it was proved that the milk sold was deficient in fat to the extent of 26 per cent., and therefore contained less than the minimum quantity of fat fixed by the Sale of Milk Regulations, 1901, viz., 3 per cent. of milk fat. Evidence was also given and it was admitted that another consignment of the same morning's milk from the same cows showed on analysis 3.1 per cent. of fat (being in excess of the minimum), and the morning's milk from the same cows seven days later showed on analysis a deficiency of 3 per cent. only. The Justices were of opinion that although the sample, the subject of the summons, was not of the nature, substance and quality of the article contracted to be sold, yet the defendant had not tampered with the milk, and the milk was as it came

from the cows, and they dismissed the summons. On appeal to the Divisional Court it was held that the case should go back to the Justices with a direction to convict unless further evidence were called before them which they ought to hear bearing upon the question of whether or not the difference between the quantities of fat in the two consignments was consistent with ordinary milking. The evidence already offered as to the difference in the two consignments was held insufficient to relieve the farmer from liability for deficiency in fat of the sample in respect of which he was summoned. In a Scottish case of *Scott v. Jack* (1912, S.C. (J.) 87) on a similar prosecution for selling milk not containing the required percentage of milk fat, the view taken by the Court is hardly reconcilable with the last case. It was there proved that it had not been tampered with or adulterated, but had been sold in the same condition as yielded by the cows, and that the deficiency of milk fat and solids was due to the method of feeding which had been purposely adopted to produce quantity of milk irrespective of quality. It was held that the milk was "genuine" within the Sale of Milk Regulations, 1901, and that the accused was not guilty of the offence charged, and the Judges commented adversely on the decision of *Smithies v. Bridge* (71 L.J.K.B., 555; 1902, 2 K.B., 13) where a milk seller was convicted of an offence against the Sale of Food and Drugs Act, 1875, when the milk had not been tampered with or adulterated, but was found deficient in milk fat in consequence of the length of time which had elapsed since the cow had last been milked. That case however, arose before the Sale of Milk Regulations, 1901, were in force.

5. *Game.* In *Leworthy v. Rees* (77 J.P., 268; 29 Times L.R., 408) it was held that the restriction in Section 6 of the Ground Game Act, 1880, that "no person having a right of killing ground game under this Act or otherwise . . . shall for the purpose of killing ground game employ spring traps except in rabbit holes" does not apply to an occupying owner of land or to a person authorised by him in writing to kill and take ground game. Such persons may set traps for ground game where they please on land in their own occupation. In the Scottish case of *Nicoll v. Strachan* (1913, S.C. (J.) 18) a gamekeeper shot a rabbit in the public road, and the rabbit then ran into private ground, and there fell dead or moribund. The shooter sent his dog into the private ground to retrieve the rabbit. It was held that he did not commit a trespass "in search or pursuit of conies" within the meaning of Section 1 of the Game (Scotland) Act, 1832, which corresponds with Section 30 of the English Game Act, 1831.

6. *Commons.* Two recent cases on common rights may be noticed. In *Hope v. Osborne* (82 L.J.Ch., 457 ; 1913, 2 Ch., 349) the plaintiff was lord of a manor, and as such had a right to the soil of two heaths, each of which was 200 acres in extent, subject to the rights of commoners to pasture cattle and to turf and heather therefrom for fuel and litter. Trees had grown up on the heath, and the defendants, who were commoners, believing that they were acting within their rights, felled the trees as interfering with their rights. It was held that they had no right thus to take the law into their own hands and abate the alleged nuisance caused by the trees. It was said that commoners in such a case, unless they were completely excluded from the enjoyment of their rights, should resort to the Courts for the purpose of ascertaining and enforcing them. In *King v. Brown, Durant & Co., Ltd.* (82 L.J.Ch., 548 ; 1913, 2 Ch., 416) certain owners of an enfranchised copyhold entitled to common of pasture for their cattle over the waste of the manor, damaged the herbage thereon by conveying goods to and from their premises over the waste. It was held that though a mere commoner cannot maintain an action against another person having a right of common over the same ground, or even against a stranger, for a simple trespass such as walking over the grass of the common, anything by which the commoner's right of common is disturbed, any unlawful consumption or taking away or destruction of the herbage is actionable, even when done by one of the other persons having a right of common over the waste. The plaintiff, who was also a commoner, was therefore granted an injunction to restrain interference with his right of common.

7. *Miscellaneous.* *Latham v. Spillers and Baker, Ltd.* (82 L.J.K.B., 833 ; 1913, 2 K.B. 355) was a case under the Fertilisers and Feeding Stuffs Act, 1906. The respondents who were poultry food and biscuit manufacturers sold a quantity of poultry food without giving to the purchaser an invoice stating what were the respective percentages of oil and albuminoids contained in it. The food was composed of three substances, namely, (a) biscuits made by the respondents by baking a cereal substance ; (b) greaves, the refuse or sediment left in making tallow or soap grease, purchased by the respondents in blocks ; and (c) oyster shells broken to a suitable size. The biscuits were broken by the respondents' machinery to the size required, and the greaves chopped to pieces ; the broken fragments of biscuits, the pieces of greaves, and the broken pieces of oyster shells were then mixed together by the machinery and the resulting mixture formed the poultry food. It was held that, inasmuch as the biscuits and the greaves, two of the ingredients, were articles artificially prepared, the food as

a whole was an article artificially prepared "otherwise than by being mixed, broken, ground or chopped" within the meaning of Section 1, Sub-section 2 of the Fertilisers and Feeding Stuffs Act, 1906, and that the respondents had therefore committed an offence under the Act in failing to supply to the purchaser an invoice stating the percentages of oil and albuminoids contained in the food as required by that Sub-section.

In *Phillimore v. Watford Rural Council* (82 L.J.Ch., 514; 1913, 2 Ch., 434) the question was as to the right of a rural district council to discharge the effluent from their sewage farm into a channel or ditch made by a landowner for the purpose of draining his land. The channel or ditch in question was one by which the surface water from the rising ground on each side of it found its way and was carried off, but there was no constant flow of water in it. The council by the conveyance to them of part of their sewage farms had acquired a "right of passage and running of water" through this ditch. The landowner alleged that sewage effluent had wrongfully been allowed to flow into the ditch and caused damage. It was held that the grant of a "right of passage and running water" did not entitle the council to discharge sewage effluent into the ditch, and that although the ditch was a "sewer" within the very wide definition of that word as including "sewers and drains of every description" in Section 4 of the Public Health Act, 1875 it was not vested in the local authority by this Act being excepted by Section 13 of the Act as being "made by a person for his own profit." The landowner was therefore held to be entitled to an injunction to restrain the council from causing or permitting sewage or sewage effluent to be discharged into the ditch.

Nuttall v. Pickering (82 L.J.K.B., 36; 1913, 1 K.B., 14) was a case under the Highway Act, 1835, Section 78 of which enacts that any person who shall not keep his waggon, cart, or carriage on the near side of the road for the purpose of allowing a free passage for other waggons, carts, or carriages shall be liable to a penalty. The appellant, the driver of a heavily-laden waggon, was on the wrong or off side of the road when a motor approached from behind in order to pass. The driver of the waggon signalled to the motor car to pass him on the wrong or near side which it did without having been delayed or inconvenienced. No other traffic was on that part of the road at the time. It was held that no offence had been committed under the Act as a free passage was allowed, though Lord Alverstone, C.J., in his judgment said; "I do not encourage the idea that the driver of a vehicle is entitled to keep in the middle of the road and compel the drivers of other vehicles to pass him on the wrong side."

Latham v. Johnson & Nephew, Ltd. (82 L.J.K.B., 258 ; 1913, 1 K.B., 398) is an important case on a subject that has been the subject of considerable legal discussion of late, namely, the liability of a landowner for injuries happening to persons on his land whom he has permitted to come there. A child of two and a half years of age came unaccompanied on to land belonging to the defendants who were aware that children were in the habit of coming there to play. Whilst on the land the child was injured by the fall of a stone from a heap of stones deposited there by the defendants. It was held that the child was not entitled to recover damages from the defendants for negligence. The child was at most a mere licensee while the use of the land by the defendants had been perfectly normal and the heap of stones did not constitute a trap. It was laid down that a landowner who allows persons, whether adults or children to come on to his land is not liable for an accident which happens to one of them there unless the coming on the land was the result of allurement or invitation, or unless the accident was due to something in the nature of a concealed trap or to something dangerous and outside the ordinary use of the land which the landowner brought on to it without warning the licensee.

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THE ORGANISATION OF THE WOOL INDUSTRY.

A COMPARISON between the prices obtained for English wool when marketed on the usual lines and the prices obtained for Colonial wool of a similar class on the London Wool Markets leads to the conclusion that the more highly organised methods adopted by the Colonials in respect of classifying and packing, insure a better monetary return to the producers. Inquiries have been made by the Agricultural Organization Society amongst wool buyers in England and Wales, and the opinion was formed that if a more highly organised system of marketing was adopted by the home sheep farmers, they might reasonably expect to obtain better prices for home grown wool. The outstanding features of the Colonial system are the classification of the wool and the placing of it when classified on the market in large consignments so that the woollen manufacturers can, with a minimum amount of trouble, buy just the quality and amount which they require for a particular kind of cloth or other woollen article.

It is different with home grown wool; British wool is either not separated into classes at all or the separation is done only in the roughest way, it is often carelessly packed in bulky sheets and contains all sorts of dirt and impurities, and is sold through local brokers or agents or at local auction fairs. The difference in method is not unnaturally reflected in the prices received for the wool in the different cases. There is no reason why British farmers should not by co-operation place themselves in as strong a position as the Colonial farmers have done, and the Agricultural Organization Society has drawn up a scheme which the wool producers of a district can co-operate to carry out. The scheme provides for securing a central depôt in any given district to which the farmers of the district can bring their wool and have it classified by an expert classer, bulked with the other wool of the same standard of quality similarly treated, and marketed in the most saleable form. The shearing of the sheep under the scheme is done on the farm and it is suggested that the most economical course to pursue is for the first rough separation to be made at the time of shearing, before the wool is sent to the central depôt. Each member of the wool society is asked to conform to the regulations of the society relating to shearing, preliminary packing, delivery to depôt, treatment of sheets, classification of the wool, and the marketing of the wool.

The suggested bye-laws for adoption by a co-operative wool society are as follows :—

1. All sheep to be shorn on a boarded floor.
2. Separate sheets to be hung up in the shearing shed to receive the wool after being separated into four lots, viz., fleeces, pieces, bellies, and locks, in addition to the usual division of washed and unwashed, hogs and ewes.
3. The bellies to be shorn and placed in the *bellies* sheet.
4. Each fleece as shorn to be immediately thrown on the wool table and spread out, clean side uppermost; the strong woolled britch to be broken off, also any dirty locks adhering to the fleece.
5. The parts thus separated to be placed in the *pieces* sheet.
6. Fleeces to be rolled and neatly tied with the neck wool. No twine or string to be used for this purpose. Fleeces thus rolled to be placed in the *fleeces* sheet.
7. During the shearing the floor to be kept clean by constant sweeping. all pieces of dirty wool to be picked out from the sweepings and places in the *locks* sheet.
8. Sheets as filled with the different classes of wool to be sewn up with good string—no binder twine to be used—and carefully labelled as to the class of wool contained therein.
9. Sewn up sheets to be removed to a covered dry place.
10. Only sheets supplied by the Society to be used; these sheets will be marked according to the different classes to be placed therein.
11. When shearing is completed the full sheets to be sent into the depôt and a receipt obtained for the number of pounds of each class of wool delivered, which will have been separated as follows :—

Washed Wool		Unwashed Wool	
<i>Hogs</i>	<i>Ewes.</i>	<i>Hogs</i>	<i>Ewes.</i>
Fleeces.	Fleeces	Fleeces.	Fleeces
Pieces	Pieces	Pieces	Pieces.
Bellies	Bellies.	Bellies.	Bellies
Locks.	Locks	Locks.	Locks

On the completion of the year's clip, an expert classer is employed to classify the fleeces according to the quality. Each farmer's fleeces are treated separately and the farmer credited with the amount he has sent in under each class. The wool is then bulked, but the separate classes are always kept distinct, and it is packed in sheets for sale and distinctly labelled.

The expenses of working a society of the nature outlined would vary according to the scheme adopted. The expenditure would fall under two headings :—

(a) Capital expenditure to be defrayed out of share capital.

Under this heading would come (if necessary) :—

- The purchase of shearing plant ;
- The fitting up of the collecting depôt ;
- The purchase of a weighing machine ;
- The purchase of sheets ;
- The purchase of a press.

(b) Working expenditure to be defrayed out of income.

Under this heading would fall :—

- The cost of registering the Society ;
- The rent of a collecting depôt ;
- The wages of the man in charge of the depôt ;
- The wages of a classer and labourers ;
- Auctioneer's charges ;
- Cost of clerical work ;
- Annual membership contribution to the Agricultural Organization Society.

It has to be borne in mind that most of the working charges will require to be met for a short period of the year only. The working expenses should be paid out of revenue, and can be met by the Society charging a small commission on sales.

The first instance of home-grown wool being dealt with on co-operative lines occurred in 1912, when about fifty members of the North West Flintshire Agricultural Co-operative Society disposed of their wool co-operatively, the total value of this wool being about 400*l.* The wool was collected at the Society's warehouse and there classed, with the result that an increase of about 1*d.* per lb. was obtained over current prices obtained by other farmers locally.

As a result of the propagandist work of the Agricultural Organization Society sheep farmers in two districts, namely Carnarvonshire and the Brandsby and Malton districts in Yorkshire, decided to deal with their clips for 1913 on co-operative lines. In each of these experiments, however, there is a slight variation from the procedure outlined above. It will be seen in this scheme that the preliminary division of the wool should be made at the farm of a member of the society sending in the wool, but it was thought advisable to carry out all the classing of the wool at the *depôt* hired for the purpose, although the cost is slightly more, at any rate for the first year, to ensure that the classing should be carried out with the utmost care and in order to give the experiment every chance of success. In the Brandsby and Malton districts of Yorkshire the work was undertaken by the Brandsby Agricultural Trading Society. Several meetings were held under the auspices of this society, and the members decided that they would adopt the co-operative scheme, and promised that the fleeces from about 7,000 sheep would be forthcoming for the experiment. A wool committee was formed amongst the members to carry out the scheme, a *depôt* was hired at Malton (Yorkshire), estimates were obtained as to railway rates, sea freights, insurance, cost of bales, and cost of wool presses; an expert classer was employed to visit the *depôt*, when all the wool was sent in, to divide it into its proper lots in order that it should meet market requirements. It is interesting to note that the committee decided, in view of the fact that the wool was to be sold on the London Wool Exchange, to have it baled similar to the colonial wool which is sold on the Exchange, so that the buyers should be able to purchase it in a form to which they were accustomed.

By the middle of June, 1913, over 7,000 fleeces had been received at the *depôt*, and as each farmer's wool came in it was weighed, and a receipt given him by the Secretary of the Society. Each farmer's wool was classed separately by an expert classer, and the amount of each class which should be credited to each member was noted. The time taken to complete the classing was about eleven days, and at the end of this time 197 bales of classed wool were consigned to London for sale at the London Wool Exchange. This was the first occasion on which English wool has been sold at the London and Colonial wool sales, and it is satisfactory to know that the competition for this wool was good. The *Times* for July 12th says:—

"The 200 bales of English wool from the East Riding commanded particular attention from all sections of the trade, and met with spirited competition, very full prices being paid."

The cost to the members for dealing with the wool under the scheme amounted to just $\frac{3}{4}$ d. per lb.; this sum covered payment for the following:—Renting depôt, wages and maintenance of expert classer, wages to labourers employed to assist in the classing, interest on capital outlayed in the purchase of weighing machines, wool presses and other installations, and depreciation on same; cost of wool-packs and packing of wool; railway freight from Malton, Yorkshire, to Hull; sea freight from Hull to London; insurance from the time the wool was received at the depôt until it was sold; port dues at London; warehousing charges, advertising, cataloguing, and broker's charges.

In Carnarvonshire a special Wool Society was formed under the title of the Carnarvonshire Wool Society. A number of members joined the Society and promised the sale of their wool through it, and forty-four of these sent in 10,000 fleeces to be sold. A depôt was rented at Portmadoc, and work was carried out on exactly the same lines as those adopted at Malton, Yorkshire. In October, 1913, 133 bales of Welsh wool were catalogued for sale amongst the Colonial wool at the London Wool Exchange. The cost of dealing with this wool to the members of the Carnarvonshire Wool Society was more per pound than that to the members of the Brandsby Agricultural Trading Society for the following reasons:—The fleeces sent in by the latter were larger than the Welsh fleeces, weighing about 6 lb. each, whereas the fleeces of the small mountain sheep did not average 2 lb. each. The work and time necessary to class one of the larger fleeces was not more than that occupied in carrying out the same operations with one of the smaller. The time occupied in classing 133 bales of Welsh wool at Portmadoc was one month as compared with eleven days for the classing of 197 bales at Malton. When all the expenses were paid it was found that the experiment had cost the society about $1\frac{1}{4}$ d. per lb. for classing and marketing the wool. Figures to show a comparison between the prices obtained for the wool classed in these experiments and sold on the London Wool Exchange and those obtained for similar wool sold in the ordinary way are not readily available owing to the great difficulty in securing reliable prices in the case of the latter wool, and the difficulty of comparing the prices for classed wool with unclassified. The experiments, however, are considered to be quite a success, and the farmers concerned have decided to adopt similar methods for next season's clip.

The Agricultural Organization Society is endeavouring to organise further districts for the sale of wool on co-operative lines during 1914, and will be pleased to give any further information possible with regard to the system advocated, and

to give advice as to the methods best suited to different districts and the probable cost of fitting up depôts for carrying through any scheme for a particular district. The Society, however, points out that the cost of dealing with wool on organised lines will, in view of the experience gained in the above-mentioned experiments, probably be considerably less per pound as it will be possible to suggest economies in several directions. Especially, it is to be noted, a considerable saving will be effected in the cost of transport as a modification of the scheme is being worked out which will reduce this charge to about one-tenth of that borne by the societies responsible for the carrying out of the experiments in 1913.

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THE BRISTOL SHOW, 1913.

BRISTOL—"the western gateway of the old country"—has every reason to be proud of the magnificent Exhibition held on its beautiful Durdham and Clifton Downs in the first week of July. It was the third time the National Agricultural Show had been held in the City, and, from every conceivable point of view, it was a marked success. That most important factor in connection with the "Royal"—the weather—was on its best behaviour from the opening to the close of the Show, and may be said to have made some amends for the succession of wet days on the occasion of the visit to the neighbouring city of Gloucester four years previously.

It is usual in this report to bring together in a table figures as to the entries, attendances, and financial results of all the Shows held in the locality visited, and accordingly these particulars are given below :—

Year	Place of Meeting	President	Imple- ments entered	Entries of live stock	Persons paying for admission	Financial Result (+ = Profit - = Loss)
1842	Bristol . .	Mr Henry Handley, M P.	455	510	No record	£
1851	Gloucester .	Lord Ashburton .	1,803	737	36,245	- 1,806
1878	Bristol . .	Col. Kingscote, C.B. M P.	6,837	1,354	122,042	2,084
1909	Gloucester .	Earl of Jersey, G.C.B.	4,682	2,980	88,396	+ 1,607
1913	Bristol . .	Earl of Northbrook .	5,652	2,852	179,146	+ 3,115

As to the financial results, it will be seen that the two profitable Shows held at Bristol in 1878 and 1913 have more than counterbalanced the losses incurred on the other west country Shows.

About 100 acres of the celebrated Downs were enclosed for the purposes of the Showyard, which was situated amongst charming surroundings on a plateau some 250 ft. above sea level, overlooking the Avon Gorge. In form the site followed the letter Y, the outer fencing of the upper arms being erected alongside the road running round the top of the steep incline known as "The Gully."

A certain amount of levelling was necessary, but somewhat less than usual. The presence of trees and bushes in many places, however, though serving to beautify the Showground, called for a good deal of ingenuity on the part of the officials in setting out the various buildings. Great care also had to be exercised in erecting the shedding in order that a number of footpaths across the Downs should only be closed for the briefest possible period. The making of the thousands of post-holes necessary in the preliminary stages was by no means a simple matter at Bristol owing to the rocky character of the ground.

The Showground was some considerable distance from the centre of the city, but the electric tram, motor cab, and charabanc services provided by the Bristol Tramways and Carriage Co. were of such an excellent character that little difficulty was experienced by visitors in getting to the Show. The Railway Companies, on their part, did everything that was expected of them, both in connection with the passenger traffic and the transport of exhibits of all kinds.

The first day, July 1, was largely taken up as usual, by the judging in all departments.

A section of special interest at Bristol was that devoted exclusively to the exhibits of the British Dominions overseas, a new departure for which a special local committee were primarily responsible. This committee, by the issue and distribution of 250,000 copies of an "advance programme," also did much, in the Colonies and in the United States, to advertise the Bristol Show, and it is doubtful if any previous exhibition of the Society had so many visitors from the different parts of the British Empire overseas and from foreign countries.

On the second day, July 2, the Governors and Members held their meeting in the large tent, when the announcement of the awards of the Judges of Farms and of Plantations was made, and resolutions were enthusiastically passed thanking the Lord Mayor, the Corporation, the Local Committees, and the Railway Companies for the assistance they had severally rendered. An interesting ceremony at the meeting was the presentation of the Diploma of Honorary Membership of the Society to the Hon. James Wilson, ex-Minister of Agriculture

at Washington. [A full report of the proceedings will be found at pp. xxviii-xxxiii of the Appendix.]

During the day the Show was visited by a deputation from the Royal Horticultural Society, who inspected the Horticultural Section and awarded a number of Medals for exhibits of special excellence. The members of the deputation were the guests of Lord Northbrook (President) at luncheon.

Both on the Wednesday and Thursday the Showyard was kept open until 9 p.m., naval and military displays being given in the Large Horse Ring from 5.30 p.m. by the Royal Naval Reserves, men from the Depôt of the Gloucestershire Regiment, and the South Cavalry Depôt. Similar displays were also given on the last two days, but the Yard was closed at the usual hour—8 p.m.

On the evening of Wednesday a banquet was given by the Lord Mayor at the Mansion House.

A pleasing incident took place on the morning of Thursday, when Sir Gilbert Greenall was presented with a hunting crop by the herdsman in charge of the Jersey cattle exhibits. The presentation took the recipient entirely by surprise, but was highly appreciated by him, bearing evidence as it did of the kindly feeling which the donors entertain for the Honorary Director of the Royal.

His Majesty the King honoured the Show with his presence on the Friday, the first shilling day. On the way from Temple Meads Station, which was reached about noon, the Royal procession was stopped at the foot of the new King Edward VII. Memorial in front of the Victoria Rooms, and his Majesty graciously received an address from the City. The address contained the following reference to the Society :

"The ever widening scope of the aims and objects of the Society is strikingly emphasised in the present Show by the introduction at the instance of the Bristol Committee of a section which illustrates the products of your Majesty's Overseas Dominions and the comparison which, for the first time in the history of the Society, can now be made between the products of the home country and the Colonies must of necessity be fraught with advantage to the future of agriculture throughout your Majesty's world-wide Dominions, whilst the attendance of great numbers of visitors from across the seas will, we trust, go far to strengthen the ties of friendship which already exist between the various peoples of your Majesty's vast Empire."

The King's reply, which was handed to the Lord Mayor, was as below :

"I thank you most heartily for the loyal and affectionate welcome with which you have greeted me. It is with great pleasure that I visit again your ancient city and find you extending your hospitality to the Show held by the Royal Agricultural Society. Agriculture is an industry which has always been of the greatest importance in our national life. Its further development has my constant interest and support; and I

trust the present Agricultural Show will do much to foster a healthy spirit of enterprise amongst the farmers and breeders of the West of England.

"I learn with interest of the introduction for the first time of a section illustrating the processes of agriculture in my Overseas Dominions. It is gratifying to find that this section originates in the City of Bristol, which has been so long and so honourably connected with many of the Dominions, and I have no doubt that it will serve not a little to strengthen those bonds of mutual help and affection which so happily exist between the various parts of my Empire.

"I have viewed with admiration the fine statue of my father which you have erected. His efforts in the cause of peace are appropriately commemorated in a city whose chief triumphs are in the field of peaceful commerce, and I appreciate deeply the affection for his memory which this statue represents.

"I shall always recall with pleasure my visits to Bristol, and pray for your continuing success and happiness."

The Showground was reached shortly before one o'clock. At the Royal Pavilion the King was received by the Earl of Northbrook, as President, with whom were Members of the Council and of the Local Committees. Several gentlemen were presented, and his Majesty received an address from the Governors of the Royal Agricultural College.

A number of Crimean and Indian Mutiny veterans were then inspected by his Majesty, who afterwards honoured the President with his company at luncheon in the Royal Pavilion.

About 2.15 p.m. the King, accompanied by the President, made a tour of the Showyard in a pair-horse landau, driving, first of all, through the implement section, where a number of exhibits were inspected, including the Darby-Maskell Motor Plough. A halt was made at the stand of the National Sugar Beet Association, where his Majesty was received by the Earl of Denbigh (President), and other officials of the Association. The exhibits in the Horticultural Exhibition having afterwards been inspected, His Majesty was next taken through the Overseas Section, where he left the carriage, and spent some time looking at the exhibits, particular attention being paid to those of the Australian Commonwealth, the Canadian Pacific Railway "ready-made farm," and the West Indian exhibits. Proceeding then to the Stock Department another halt was made for His Majesty to see the specimens of primitive sheep, close by which had been "parked" the champion pen of Southdowns from Sandringham. The Education and Forestry Exhibitions were next visited, after which His Majesty walked to the shed containing the Milking Machines, in which exhibits he displayed much interest.

At this point the King entered a four-horse carriage, and was driven through the Cattle Section to the large ring, where he entered the Royal Box in the Grand Stand, from which he witnessed a display of horse jumping.

His Majesty left the Show at 4.20 p.m., and returned to town by the 4.50 train from Temple Meads Station.

The attendance on the Friday was 78,702, which, as will be seen from the tables given below, was by far the largest day's total during the week.

From five o'clock until eight o'clock on Friday and during the forenoon of Saturday the public were admitted to the Royal Pavilion at the charge of sixpence each, the proceeds going to the Royal Infirmary and General Hospital.

The aggregate number of visitors who paid for admission during the five days was 179,148, a total which has only been exceeded on four previous occasions, viz., at Newcastle, 1908 (213,867), at Manchester, 1897 (217,980), at Kilburn, 1879 (187,323), and at Manchester, 1869 (189,102). Tables giving the daily figures at different hours, together with the attendances at previous Shows, are appended.

(1) *Admissions by Payment at Bristol, 1913.*

Day of Show	11 a.m.	1 p.m.	3 p.m.	5 p.m.	Day's total
Tuesday (5s.)	606	1,167	1,522	1,735	1,769
Wednesday (2s. 6d.), after 5 p.m., 1s.	3,829	8,467	12,218	13,751	21,632
Thursday (2s. 6d.), after 5 p.m., 1s.	5,311	13,988	19,269	21,124	31,155
Friday (1s.)	21,291	44,447	65,749	73,347	78,702
Saturday (1s.)	10,239	20,367	31,076	43,225	45,890
Total Admissions					179,148

(2) *Total daily admissions at the 1913 Show, compared with the previous six Shows and the Bristol Show of 1878.*

Prices of Admission	Bristol, 1913	Doncaster, 1912	Norwich, 1911	Liverpool, 1910	Gloucester, 1909	Newcastle, 1908	Lincoln, 1907	Bristol 1878
Five Shillings (Implementation Yard only)	—	—	—	—	—	—	—	70
Five Shillings	1,769	1,377	878	2,492	1,492	2,307	1,680	2,119
Half-crown	21,632	10,780	7,140	19,646	20,018	32,142	22,885	19,228
Half-crown	31,155	18,914	20,442	30,193	15,452	28,880	22,725	22,404
One Shilling	78,702	39,354	75,288	44,327	30,281	99,489	51,888	48,214
One Shilling	45,890	19,814	17,739	41,154	21,152	51,959	33,878	30,012
Totals	179,148	90,139	121,465	137,812	88,396	213,867	133,006	123,042

The prizes offered in all departments amounted to 11,000*l.*, a figure which has only twice been exceeded.

Comparative statements of entries in the different sections are given on page 197. Another statement in which the two Bristol Shows, 1878 and 1913, are compared is given on page 198.

Entries of Live Stock, Poultry, and Produce.

	Bristol 1913	Don- caster, 1912	Norwich, 1911	Liver- pool, 1910	Glon- cester, 1909	New- castle, 1908	Lincoln, 1907	Derby, 1906	Bristol, 1878
Horses	1584	1773	1716	1686	1599	1664	1506	1563	350
Cattle	1118	1080	1085	938	1148	948	1,090	926	443
Sheep	796	731	740	772	802	695	672	564	397
Pigs	304	426	416	301	433	312	368	266	164
Total	2,852	3,022	2,943	2,757	2,980	2,619	2,576	2,319	1,354
Poultry	1,436	1,242	1,218	1,185	754	768	826	811	—
Produce	685	559	670	701	765	416	572	525	226

¹ Exclusive of Double Entries.

² Exhibition of Cattle Sheep and Pig prohibited by order of Board of Agriculture

Shedding in Implement Yard (in feet).

Description of Shedding	Bristol 1913	Don- caster 1912	Norwich, 1911	Liver- pool, 1910	Glon- cester, 1909	New- castle, 1908	Lincoln, 1907	Derby, 1906	Bristol, ¹ 1878
Ordinary	Feet 6,870	Feet 7,050	Feet 6,690	Feet 7,590	Feet 7,575	Feet 6,490	Feet 7,650	Feet 7,818	Feet 11,735
Machinery	3,665	3,125	3,085	2,555	2,420	2,585	2,165	2,520	2,947
Special (Seeds, Models, &c.)	3,689	3,368	3,907	3,420	2,391	2,960	3,251	2,892	964
Total [Exclusive of open ground space]	14,224	13,538	13,692	13,565	12,886	12,035	13,066	13,030	15,546
No of Stands	513	442	457	454	437	389	417	424	435

² At Bristol, in 1878, there was no limit to the amount of feet allotted to an exhibitor.

DESCRIPTION OF EXHIBITS.

Appended are the usual particulars taken from the reports made by the Judges of the various sections.

A complete list of the awards with full information as to exhibitors, breeders, pedigrees, &c., of the prize-winning animals will be found in the Appendix, together with a list of the Stewards and Judges who officiated (see pp. xlviii-liii).

HORSES.

With 584 entries this portion of the Exhibition showed a considerable falling off as compared with Doncaster. Although the horse section was not so strong numerically, this deficiency was to a great extent made up by the quality of the exhibits at Bristol, which was excellent throughout.

Shires.—These classes were all well filled with good animals. In Class 1 (yearling colts) the first prize horse was an exceptionally good colt, and being by the noted sire "Childwick Champion" he will no doubt develop into a valuable stock horse. The second prize animal is a lean colt, but moves well

**COMPARATIVE STATEMENT OF ENTRIES, ETC.,
AT THE LAST TWO SHOWS HELD AT BRISTOL IN 1878 AND 1913.**

HORSES AND CATTLE	1878		1913		SHEEP, PIGS, POULTRY, PRODUCE	1878		1913	
	Classes	Entries	Classes	Entries		Classes	Entries	Classes	Entries
HORSES:—					SHEEP:—				
<i>Prizes</i>	—	£1,080	—	£3,591	<i>Prizes</i>	—	£920	—	£1,836
Shire	5	77	10	93	Oxford Down	3	35	5	51
Clydesdale	3	20	8	40	Shropshire	3	57	6	75
Suffolk	3	11	6	33	Southdown	3	67	6	66
Hunter	7	122	11	96	Hampshire Down	3	29	8	94
Polo Pony	—	—	5	43	Suffolk	—	—	6	20
Cleveland Bay or	—	—	—	—	Dorset Down	—	—	3	15
Coach Horse	—	—	2	8	Dorset Horn	3	8	4	27
Hackney	4	53	9	49	Riveland	—	—	4	16
Hackney Pony	6	67	4	14	Kerry Hill (Wales)	—	—	2	8
Shetland Pony	—	—	2	9	Lincoln	3	36	7	67
Welsh Pony	—	—	7	23	Leicester	3	45	4	20
Riding Classes	—	—	11	125	Border Leicester	—	—	3	30
Harness Classes	—	—	12	156	Wensleydale	—	—	4	17
Draught Horse	—	—	1	3	Lonk	—	—	2	6
Jumping	—	—	4	74	Derbyshire Gt.-stone	—	—	2	6
					Kent or Romney	—	—	—	—
					Marsh	—	—	6	87
					Ootswold	3	40	4	24
					Devon	3	18	5	10
					South Devon	—	—	5	23
					Dartmoor	3	10	3	17
					Exmoor	3	14	3	8
					Cheviot	—	—	3	12
					Herdwick	—	—	2	7
					Welsh	—	—	2	18
					Black-faced	—	—	—	—
					Mountain	—	—	2	12
CATTLE:—					Total for SHEEP	33	397	99	736
<i>Prizes</i>	—	£1,770	—	£2,855	PIGS:—				
Shorthorn	9	145	18	335	<i>Prizes</i>	—	£300	—	£763
Lincolnshire Red	—	—	8	44	Large White	4	24	8	195
Shorthorn	9	95	8	89	Middle White	—	—	6	62
Hereford	8	44	7	62	Small White	4	26	—	—
Devon	—	—	5	32	Tamworth	—	—	6	88
South Devon	4	11	4	28	Berkshire	4	61	6	60
Longhorn	4	39	6	21	Black	4	26	6	61
Sussex	6	41	6	39	Lincolnshire Curly-	—	—	6	38
Welsh	—	—	5	51	coated	—	—	—	—
Red Poll	—	—	6	50	Other Breeds	4	26	—	—
Aberdeen Angus	—	—	5	24	Total for PIGS	20	164	37	394
Galloway	—	—	3	3	TOTAL FOR STOCK	134	1,354	378	3,232
Highland	—	—	3	14	POULTRY:—				
Ayrshire	—	—	5	41	<i>Prizes</i>	—	—	—	£433
British Holstein	4	56	8	171		—	—	140	1,436
Jersey	3	29	6	72	PRODUCE:—				
Guernsey	—	—	4	25	<i>Prizes</i>	—	£344	—	£316
Kerry	—	—	4	45		8	226	62	665
Dexter	3	13	2	13					
Dairy Cows	—	—	12	117					
Milk Yield	—	—	2	66					
Butter Test	—	—	—	—					
Total for CATTLE	53	443	128	1,537 ¹					

Grand Totals for
LIVE STOCK, POULTRY,
and PRODUCE in 1913. } 560 Classes . 5,353 Entries . £11,000² Prizes

¹ Animals exhibited in more than one class are here counted as separate entries.

² Including £300 for Farm Prizes, £250 for Horticultural Exhibition, £100 for Forestry Exhibition, £150 for Competitions.

and is full of promise. The third prize colt by "Babingley Nulli Secundus," has a lot of substance and will probably see a better day a little later on. In Class 2 (two-year-old colts), the winner was soon found in *Tandridge Future King*. He is a big colt with good feet and a fine mover. The second prize colt is by "Halstead Royal Duke" and from a "Tatton Friar" mare. He is a very solid colt and made a good second. The third prize colt was another hard coloured animal by "Norbury Menestrel" which cannot fail to make a good animal. Class 3 (three-year-old colts) was well-filled with good horses. The first prize was won by *Rowington Dray King*. He is a well-grown good coloured animal and made an excellent show, and was afterwards awarded the Championship. The second prize colt was somewhat less than the first but a typical shire, and was eventually placed reserve for Champion. The third colt had good legs and feet, but lacked size. In Class 4 (yearling fillies) the London winner was placed first and has grown and improved since her appearance at Islington. The second prize filly was not quite so big, but very correct, and made a good show. The third was by "Friars Master" and is a well-grown useful filly. The Judges did not consider this a strong class. Class 5 (two-year-old fillies) was topped by *Leek Dorothy*, a very good filly. The second was another exceptionally good filly by "Mimms Champion." The third also was a well-known winner named *Rickford Gem*. Class 6 was considered by the Judges the strongest that came before them. The winner, *Halstead Duchess 7th*, not only won her class but also won the medal for the best female in the Show. The second prize animal is low-grown, wide, and quite a good sort. *Tandridge Bracelet*, the third prize winner, made an excellent show, being a big animal with a lot of quality. Class 7 was headed by *Halstead Royal Duchess* a well-known winner and a very correct mare. The second prize animal was of rather different type, somewhat reduced in condition through nursing her foal. Class 8 was another very strong one headed by a very good mare, *Marden Peach*. The second was a well-known mare, *Mollington Movement*, not showing quite the same bloom as when younger. The third prize winner in this class, *Lilleshall Countess*, was also the dam of the first prize filly foal. A very good mare was placed reserve in *Lady Forester*. She had at foot a slashing good colt foal by "Slipton King," which had an easy win in its class.

Clydesdales.—In the class for yearling colts the first prize went to a big handsome well-made animal with good flat bones and a very straight close goer. The second prize winner was a big handsome colt, a good goer, slightly open behind. The third was a colt of nice quality, rather out of bloom. In the

two-year-old class a colt of great substance won, with a very good foreleg and foot, a little open of his thighs. The second had good quality of bone, good hind leg, beaten in his foot and strength of foreleg by the first colt. The first prize three-year-old colt was a big handsome horse of good quality, keeps himself well together, and was ultimately awarded male Championship, with the first prize yearling reserve. In the class for one-year-old fillies the first prize winner was a big handsome filly of grand quality, well set at the ground, and a very straight, close mover. Second was a handsome filly, a good mover, that with a little further improvement on her fore foot will make a first-class mare. The third prize filly was good at ground and a straight mover but plain through her body. The first prize winner in the class for two-year-old fillies was a solid weighty filly, good at the ground, a fine mover that looked like making a good breeding mare. The second was a filly, lengthy of her top and might flex her hocks a little better, but for strength and substance follows the first well. The third prize filly had beautiful quality and was a fine mover, but lacked the substance of the first two. The winning three-year-old filly was a filly of good quality, combined with strength and substance, and a first-class mover. This animal was ultimately awarded the female Championship. Of the brood mares the first, a very nice quality mare and a fine mover, was awarded reserve for the Championship. A good useful mare was placed second. The first prize winner in the foal class showed great promise, being out of the first prize mare and by the champion stallion. The second in this class was older but also a promising foal.

Suffolks.—Considering the distance from their native soil the Suffolk horse classes were fairly well filled. The first in the two-year-old stallion class was a fine upstanding colt with good feet and legs and a rare mover. In the three-year-old class was found the champion, a true type of Suffolk, big boned, with rare quality, and a capital mover, altogether a credit to the breed. The mare and filly classes were very good, especially the older mares in Class 25. On the whole the Judges were well satisfied with the animals placed before them.

Hunter Breeding Stock.—The winner in Class 28 has the making of a typical weight-carrying hunter with the best of limbs. The second also was a nice promising colt, a tiny bit long of his back. A useful colt was placed third. Quite a high-class colt was the first prize winner in Class 29. The second moved well in his trot, but wants dropping in his middle. The third, though quite a useful colt, was a little bit light in his thighs and hocks, deep through his heart. The

winner in Class 30 stood out by himself and is top class. A nice colt was second, good body, little light in second thighs and hocks. The third, a big raking colt, when he furnishes will make a valuable horse. Class 31 was moderate, but the winner was a nice blood filly, with a lot of depth and quality, whose hocks might have been stronger. Second was a big raking filly, with good front limbs and body, but her hocks a little too far away. In Class 32 the winner was a big roomy filly, with nice limbs, and with luck should grow into a valuable mare. The second, a nice blood filly, might be better in front and probably will improve. The third prize winner was a nice thick set filly, and with better action would grow into a useful mare. The winner in Class 33 was one of the most promising young animals judged. Quite a good sort was placed second, a nice mover in her paces, but wanting depth through her. The winner in Class 34 was a high-class mare with beautiful limbs, and moved the best. The second, quite a nice deep mare, fair limbs, a little short in front. The third, a great big upstanding mare, with the best of limbs, looked coachy in front. In Class 35 there was very little to choose between the first and second prize winners; they were both really good mares. The third had nice quality but needs more substance. Only one competitor came forward in Class 36, but she was well worthy of the prize. Class 37 was a most excellent one all through. The first prize winner was decidedly a high class type of weight-carrying hunter brood mare, as was also the second, but had not the liberty of action behind. The third prize went to a big roomy mare with good limbs, rather loaded about the shoulders, but still moved well in her trot. Placed fourth was a big upstanding mare, with great substance, slightly straight of her shoulders, and needed more quality compared to those placed above her. Two very useful strong weight-carrying brood mares appeared in Class 38. Class 39 was quite a good one. The winner, although a late foal, showed size and had great depth of body, with big knees and hocks. Second was a well-grown colt with great scope, whose hocks were a little far away. The first and second prize winners in Class 40 were both of nice quality, but hardly had sufficient size.

Polo and Riding Ponies.—The exhibits in all classes were distinctly good, truth of action, good feet and absence from hereditary blemishes being apparent. In the class for stallions *White Wings* and *Spanish Hero* are typical pony sires. The former won. He has fine length of shoulder, hocks and knees close to the ground, well balanced, and goes with arm action. *Spanish Hero* has beautiful quality, his hocks and knees are a trifle off the ground. Both are very good

animals. *Baudon*, by "Galashiels," and Mr. Howard Taylor's *Field Marshal*, which were third and reserve, are likely to make valuable pony sires. The yearling winner, *Ulster Day*, is an exceedingly level well-formed colt, with fine quality and good shouldered. *Forward Girlie*, the second, shows all the true characteristics of a polo pony. The two-year-old class was very good. The winner, *Flu*, is a high-class filly with great quality—the second, *The Buzzer*, is a deep well-coupled and well-balanced colt. The first three animals in the class for three-year-olds were all well up to the type—compact and with liberty. The brood mares were good, all the first three being nice mares of the right sort. *Sparkling Crocus*, the winner, is a mare of quite the type to produce a high-class pony. Generally the animals shown speak much for the credit and enterprise of the Polo Society and others interested in the breed, especially the brood mares which, if mated with animals to reproduce their type, must breed valuable polo ponies.

Cleveland Bays and Coach Horses.—The entries in these two classes were only few in number, but this is in some measure accounted for by the distance from Yorkshire which is, of course, the home of the breed. Shortness in numbers, however, was in some measure made up for by the excellent quality of the exhibits, all of which are of good class. The winner in the stallion class, *Rillington Victor*, is an exceptionally good horse with good back, and excellent character and action. The second prize horse, *Tantalus*, also shows fine quality and moves well, and is a typical coach horse. The third prize horse is of the Cleveland Bay type and has good action. There were only two mares and they were of different type. The winner, *Harome Beauty*, is a commanding mare and a fine mover. *Rillington Attraction* is a short-legged powerful mare with quality, and she moves well, though scarcely so well as the winner. There was not much between them, and they both had good foals at foot.

Hackneys.—These classes were not so finely represented, either in numbers or quality, as at Doncaster in 1912, although some very high-class horses were shown. The male Championship went to Mr. Walter W. Rycroft's *Hopwood King*, who had greatly improved since gaining premier honours at the London Show. Mr. Ernest Bewley's *Woodhatch Sunflower* was awarded the female Championship, a beautiful filly with fine action and conformation.

Hackney Ponies.—These classes were unfortunately small in the number of ponies exhibited, but the quality was excellent. In Class 57 for stallions, *Southworth Swell* was an outstanding winner, a beautiful pony all over and with extra grand action. In Class 59 for three-year-old mares or geldings, the winner,

Rusper Maryan, although rather light in bone, won on account of her exquisite quality and nice style. In Class 60 for mares with foals at foot, *Lyndhurst Paula* was an outstanding winner, full of quality combined with strength, a grand deep body, carried in grand style on the best of legs; whilst the second and third prize winners, *Seaham Norah* and *Sedgemere Berry Midget*, were both very good.

Shetland Ponies.—These classes were disappointingly small, there being only three stallions and five mares exhibited. One missed the excellent exhibits of the Ladies Hope and Mr. R. W. R. Mackenzie, of Earlshall. However, Mr. Mungall, of Transy, Dunfermline, showed two outstanding good ones in the winners of both classes, viz., *Selwood of Transy* and *Stella* respectively, both being ponies of very high quality, with plenty of bone and action; and most of the others were of considerable merit.

Welsh Ponies.—In Class 63 there were the old rivals *Shooting Star*, *Dyoll Starlight*, *Grove Ballistite* and others which have done well at a number of shows. The competition was keen, although *Shooting Star* was rather an easy winner, going with more dash than usual. *Dyoll Starlight* was not so good going or standing as he was at the Welsh National last year and at Islington in the spring. This can undoubtedly be accounted for through his age, which is telling on him for a showyard career. Still, he maintains that mountain pony character. *Grove Ballistite* went more gracefully and better than ever, yet he seems to be out of condition rather, which makes him appear ragged in his back and loin. Still, it was a close thing for second place. *The Earl of Pembroke* was looking well, but did not make the best of himself; also there was another very nice pony in this class named *Replica*. Class 64 was rather disappointing, not anything up to the required standard. A nice lot of ponies were shown in Class 65, though the number was not very encouraging, *Nantyrharn Starlight*, a known winner, again winning first and medal with nothing to spare, as she was very closely run for the position by *Little Doris*, which made a good show, but was out of condition. The third place was taken by *Muriel*, a very nice balanced pony that wants a little more dash. Next came *Stanage Aldernut*, showing the pure mountain pony in her, but she was low in condition and rather outsized by the others. Class 66 was small but rather a nice class of youngsters. The first was an outstanding winner, going very nicely but rather overloaded with flesh. The second was a useful pony and went gracefully. The third was rather on the weedy side, although nicely balanced. Class 67, for cob mares, was very disappointing in numbers.

Hunter Riding Classes.—The Society must be congratulated on receiving good entries in these classes, all being quite fairly filled. In the majority of classes, too, the quality was good. Mr. Stokes' chestnut heavy-weight four-year-old was easily best in his class—he afterwards winning the Championship prize for best hunter in the Show. Nothing calls for comment in the class for light-weight four-year-olds, beyond the fact that the majority of them had good manners and moved well. Mr. Jones, of Downton, stood second in the heavy-weight four-year-olds with a very improving chestnut. It was quite a good class, and what was pleasing was that it contained several animals which were successful in three-year-old classes last year at various shows. The first and second in Class 70 were plain animals but exceptionally good movers. It was a poor class. The same remark applies to Class 71. The class for light-weight Hunters was very good, in fact the best we had before us. Mr. Drage won with a nice bay that had been champion the previous day at Olympia, followed by a charming "ride" but with hocks not quite straight enough. The third was the winning light-weight four-year-old, while there were several others of merit. Mr. Drage again led in the middle-weights with a very hunter-like gelding that pleased in its riding. This was won somewhat easily. The heavy-weights gave rather more trouble. Mr. Stokes showed a brown gelding, poor and rather weak about its neck and shoulders, but with the best of limbs. Mr. Drage had a rather common looking grey, but a most deceptive horse, as the farther it went the better it went and was certainly a fine galloper. The other two in the class which attracted attention were the second and third in Class 71. Although not disagreeing, the Judges called in Mr. Harford as umpire, and eventually Mr. Stokes won, followed by Mr. Drage's grey. All four were animals of merit.

The ring, although of course "hard," rode very well owing to the foresight of the executive in putting down cinders at the turnings, for which, and for many other kindnesses, the Judges were most grateful.

Hack and Riding Ponies.—The classes as a rule were small and the horses were not quite what the judge would call *hacks*. They were certainly *riding horses*—but did not, as a rule, have the manners that a hack should possess. Most of them did not understand how to change their legs at a short canter when asked to do so—which is essential in a hack.

Harness Horses.—Driving classes were good, and as most animals in them are well-known winners, the Judge has little to say about them.

Draught Horses.—The class for draught horses was a very poor one, and the Judge was much surprised that there were

only three entries, as the class was open to three counties. The first prize filly was a nice type, with good feet, but rather light of bone. The second was just a work mare, though she may be well bred; and the third prize animal, which was a gelding, was very moderate, and lame when judged. The Judge regrets the Bristol Local Committee were not better supported, as they gave good prize-money.

CATTLE.

The exhibits in the cattle classes numbered 1,138, or only eight fewer than at the Gloucester Show of 1909 when the largest entry of cattle was made since the Jubilee Exhibition at Windsor in 1889. Shorthorns with 335 had the greatest representation.

A good entry was received for the Auction Sale which took place on the Thursday. Although several of the best animals had changed hands privately at good prices, yet the auction was well supported by buyers from abroad. Eighty-six head were sold, the average price realised being 85*l.* 10*s.* The top price was 500 guineas, paid by an Argentine purchaser for the two-year-old bull *Pierrot*, the winner in his class.

Shorthorns.—In these very large classes there was in each case quite the usual number of animals of a very high standard of excellence. Referring to the classes in the order they are judged the merits of the older cows were certainly of a higher order than has been seen for a number of years at the Royal Shows. Combined with wealth of flesh there was in the great majority of cases an evidence of milk which was most satisfactory.

The three-year-old class of cows contained five very good animals with little to choose between the first and second for the winner.

The class of heifers calved in 1911 on or before March 31, was headed by two animals of outstanding merit. These were *Windsor Belle* and *Bapton Beauty* placed in the order given. *Windsor Belle* is a most symmetrically built animal with beautiful colour and hair, which hides to some extent a slight unevenness in her flesh along her ribs. Standing or walking she is one of the most perfect specimens of the breed which has appeared in past years. The second winner was smoother in her flesh, had beautiful character and true shapes. There were several other excellent heifers in the class.

The class for heifers calved in 1911 after March 31 was a large one, the prize animals being quite up to the standard of those of former years.

The class for heifers calved in 1912 on or before March 31, in which there were twenty entries, was headed by one of the

best yearlings seen for a number of years. The second, third, fourth, and fifth prize heifers were of high merit.

In the class of heifers calved in 1912 after March 31, there was the large entry of thirty-one with at least twenty promising youngsters. Five prizes were awarded to beautiful animals showing much character and quality.

The awarding of the female Championship was one demanding much careful consideration. Without a doubt the honour rested between the two-year-old heifer *Windsor Belle* and the Bapton yearling heifer *Dauntless Princess*. Reference has been made to the great points and slight defects in the first-named when speaking of her as winner in her class. *Dauntless Princess* has great substance and depth of flesh, being wide, deep, and short on legs with nice hair and handle. The more matured heifer *Windsor Belle* was awarded the Championship (see Fig. 1), with *Dauntless Princess* as Reserve.

Seven groups of females were entered to compete for two prizes, and were a collection worthy of the Royal Show. The Bapton Manor group, consisting of a cow and two beautiful heifers, were placed first, followed by the Bilsington Priory lot of four, three being rather handicapped by the fourth.

Thirty-one entries were made in the class for bulls for 1908, 1909, or 1910, and those that walked into the ring made a most imposing show, seeing they were, in our opinion, of greater average merit than those of former years. Five prizes were awarded, the first going to *Montrave Ethling*, a four-year-old bull of great substance and character. He was followed by five well-known prize winning sires, somewhat different in character but all animals of great merit. In the older class of two-year-old bulls there was a large number of good animals without any being of exceptional merit. The first prize winner was a very smooth fleshed white, rather narrow across his twists. The two-year-old bulls in the younger class, calved in 1911 after March 31, were of higher merit. The first prize went without question to *Woodend Stamp*, a dark roan with wide ribs, straight, strong back and well finished quarters. The second prize went to a wide, deep, short legged bull, *Sanquhar Dreadnought*, to be followed by four bulls of substance and quality. In a large class of bulls calved in 1912, on or before March 31, the beautiful white bull *Edgcote Masterpiece* was followed by the smaller but very nicely shaped *Marquis Pearl*, the level topped *Highflyer*, and the strong, well-grown *Brave Marquis*, all prize winners at former shows.

In the large class of bulls calved in 1912, after March 31, there was quite a number of really good ones at the top, without an outstanding winner, and at the bottom a considerable number of rather indifferent specimens. The first and second

prize animals were of quite different characters, *Birdsall Champion*, the one ultimately placed first, being well-grown for his age, he carried himself well, had nice quality of flesh, with great depth of body. The second bull is a tightly built, short legged animal, with a strong back and good ribs, but has less male character in his head and neck than would be desired. Four very promising youngsters followed.

In the Group class for males Lord Middleton won with two two-year-old and two yearling bulls, the Duke of Northumberland following with a nice lot of three. Lord FitzHardinge won the special prize for the best yearling bull in Gloucestershire with *Brave Marquis*.

In the competition for the male Championship the aged bull *Montrave Ethling* and the two-year-old *Woodend Stamp* were selected. There was a slight unevenness along the old bull's back, yet his depth of body, his character and his handle gave him a strong claim for highest honours. The two-year-old, as we have remarked, with his beautifully finished quarters, good ribs and perfect back, was difficult to set aside, although his somewhat uneven underline and hard hair were to some extent objectionable. He was ultimately awarded Champion, (see Fig. 2), the old bull being made the reserve number animal.

Dairy Shorthorns.—The Judges were pleased to report very favourably on these classes generally. They were well filled with excellent examples of the dual purpose Shorthorn, the breeding of which it is the aim of the R.A.S.E. and the Dairy Shorthorn Association to promote in offering these prizes, which not only help towards the above object, but also enable breeders to exhibit animals in natural and healthy breeding condition, without prejudice to their chance of winning prizes; for one of the best features of this comparatively new movement is that the dairy cow is not improved in appearance by excessive and injurious feeding as seems to be the case in the ordinary way of exhibition. The Judges are therefore of opinion that these classes are amply justified, and that a great future is opened for a reform in the show system which is likely to be of great benefit to the dairy industry of this country, also to breeders of pedigree Shorthorns who have hitherto held back from exhibiting their animals, well knowing how disastrous is the high feeding associated with successful showing.

Class 105, for the best cow, in milk, calved in or before 1908, had an entry of twenty-four. The two placed first and second stood out clearly ahead of all other competitors and were both exceptionally good, giving large quantities of milk, from excellently shaped udders, and their scale, make, shape, and style left nothing to be desired, they were of similar type

and of nearly equal merit. Third prize went to a very nice cow of true Shorthorn character, and the whole class was commended. With one exception all the cows gave well over the required minimum yield of milk: probably most of them would give their 1,000 gals. per annum, and are quite capable of breeding bullocks fit to compete at the Smithfield Show. In Class 106, cow calved in 1909, there were eight exhibits, the majority of which showed considerable merit, their milk production being distinctly good. Class 107 had eleven entries, but, though the winners are promising heifers, the standard of excellence was rather below that of the preceding classes. In Class 108, Shorthorn bull, calved in 1911, the first prize went to a white of distinctly high class, and from every point of view suitable for service in any herd of Shorthorns whether so-called "Dairy" or otherwise. Second and third were also good animals, in no way deficient in Shorthorn character or natural flesh, though bred from "record" milking cows. Class 109, bulls calved in 1912. The above remarks apply to this class also, the first prize winner being an animal that would be an ornament in any herd of Shorthorns.

In the competitions for Group prizes and for the Fifty Pounds Challenge Cup there were several entries, and the merits very equal, the Judges having some difficulty in making their awards.

Lincolnshire Red Shorthorns.—Considering the distance from their native county, the show of Lincolnshire Red Shorthorns must be considered satisfactory. The class for cows in milk was fair, though nothing particularly outstanding. Heifers calved in 1910 had only a small but good entry, the winner being eventually placed reserve for Champion cow or heifer. A good class was that for heifers calved in 1911, very even in merit; the winner, a deep-fleshed, level, well sprung heifer, being awarded Champion (see Fig. 4). A nice show of heifers calved in 1912, the first and second prize winners showing great promise. Cows in milk made a very good show, and to those interested in dairying they must have left a favourable impression of these dual purpose cattle. The winner in the old bull class was a very fine specimen of the breed, being a massive well-fleshed bull, well filled in down the back, handles well, and good both to meet and to follow. He was made Champion (see Fig. 5). The second prize bull was a very massive one, not quite so good over the top as the winner. A good class. Bulls calved in 1911 and 1912 had a small but useful entry. The Judges consider that the show of Lincoln Reds indicates that breeders are aiming at a type of cattle nearer the ground, better filled in on the top, and earlier maturing.



FIG 1—SHORTHORN HEIFER "WINDSOP BELLE"
Winner of Champion Prize for best Shorthorn Cow or Heifer Bristol 1913
Exhibited by HIS MAJESTY THE KING

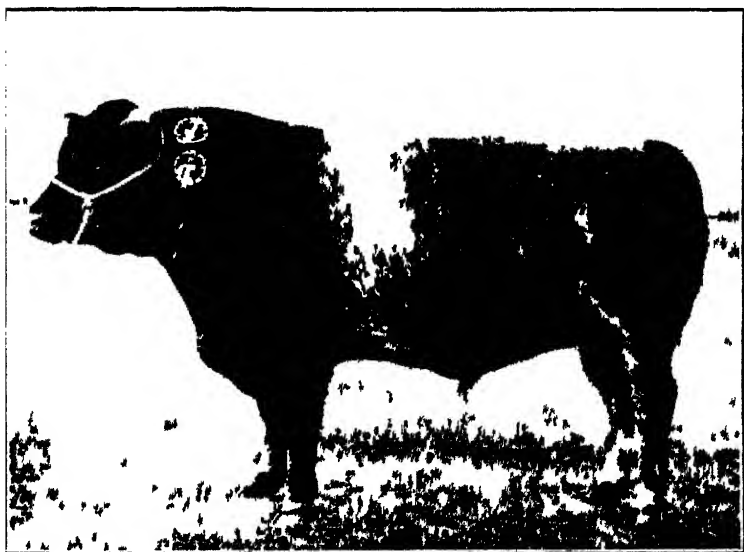


FIG 2—SHORTHORN BULL, "WOODFORD STAMP"
Winner of Champion Prize for best Shorthorn Bull Bristol 1913
Exhibited by MR GEORGE CAMPBELL



FIG 3 —SHORTHORN DAIRY COW "RINGGIFT 9TH"
 Winner of Champion Prize for best Shorthorn Dairy Cow or Heifer Bristol 1913
 Exhibited by CAPTAIN ARNOLD WILLS

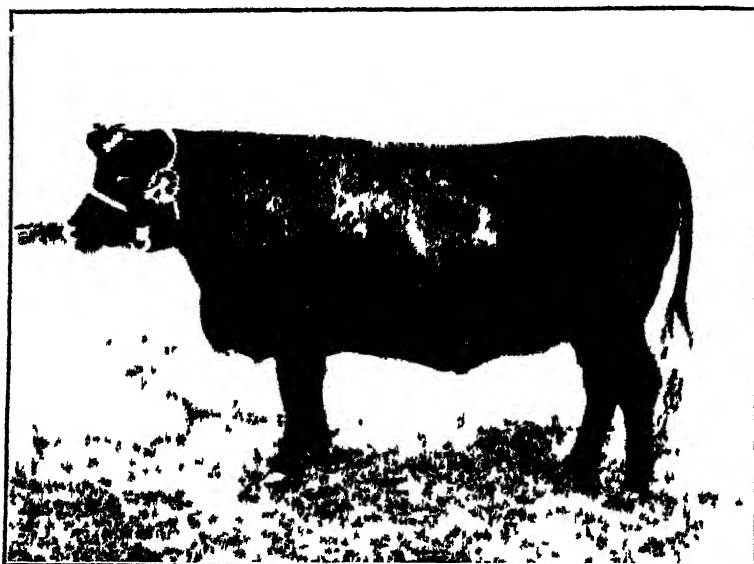


FIG 4 —LINCOLNSHIRE RED SHORTHORN HEIFER,
 "STRUBBY VIOLET 2ND"
 Winner of Champion Prize for best Lincolnshire Red Shorthorn Cow or Heifer,
 Bristol 1913
 Exhibited by MR J G WILLIAMS

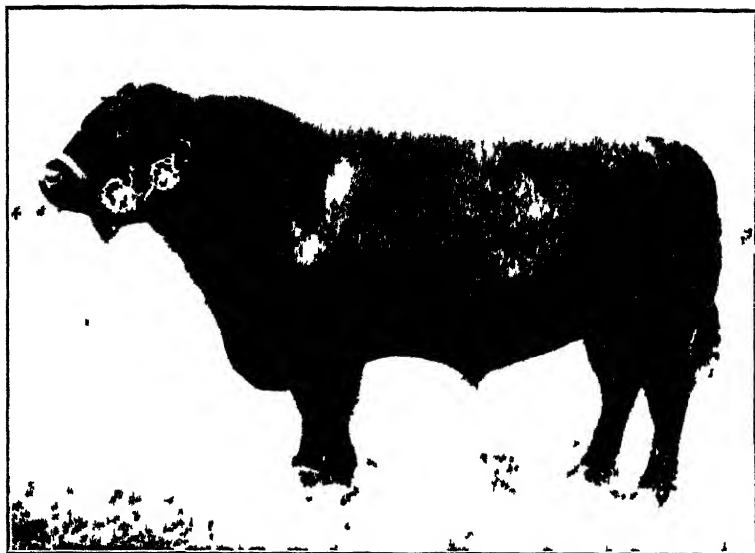


FIG 5 - LINCOLNSHIRE RED SHORTHORN BULL, "DUNSBY RED 2ND"
Winner of Champion Prize for best Lincolnshire Red Shorthorn Bull Bristol 1913
Exhibited by MR BENJAMIN ROWLAND

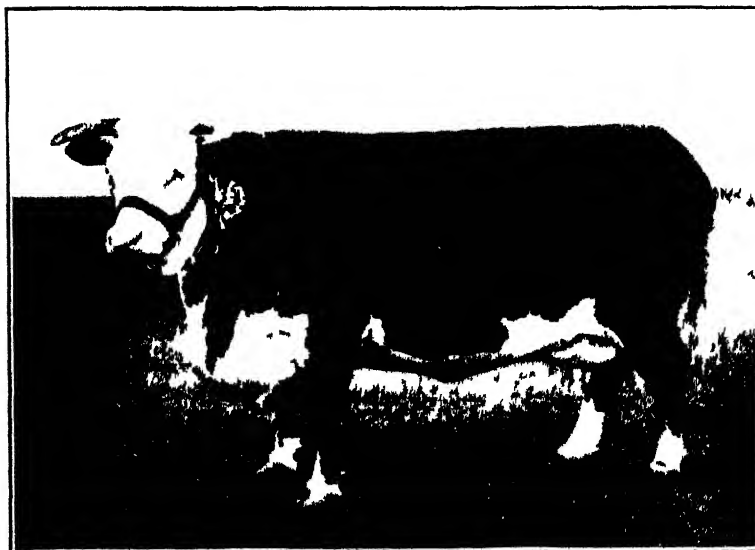


FIG 6 —HEREFORD COW, "SHELSLEY PRIMULA"
Winner of Champion Prize for best Hereford Cow or Heifer, Bristol, 1913
Exhibited by MR J G COOKE HILL

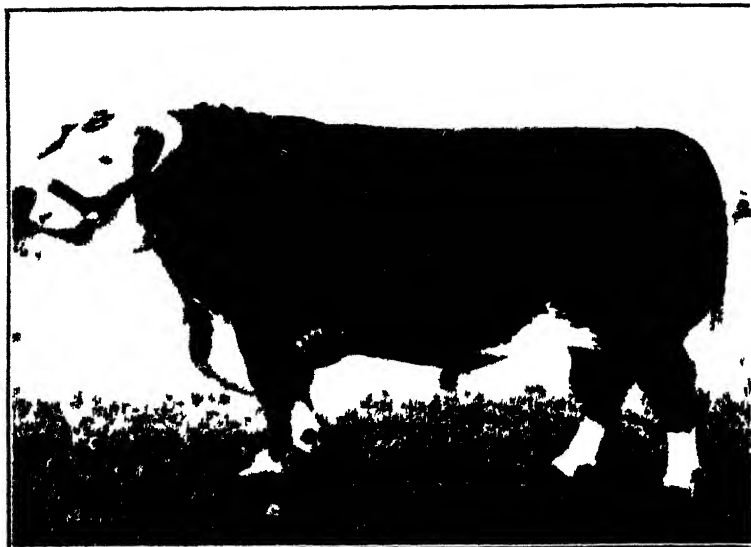


FIG 7—HEREFORD BULL, "QUARTO"
 Winner of Champion Prize for best Hereford Bull Bristol 1913
 Exhibited by MR HENRY W TAYLOR

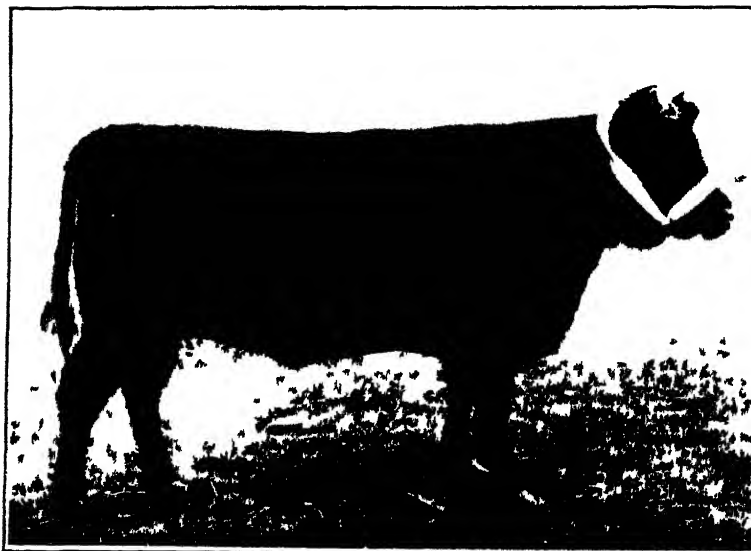


FIG 8—DEVON HEIFER, "HORRIDGE BELLE"
 Winner of Champion Prize for best Devon Cow or Heifer Bristol 1913
 Exhibited by MR LEWIS HENRY ALFORD

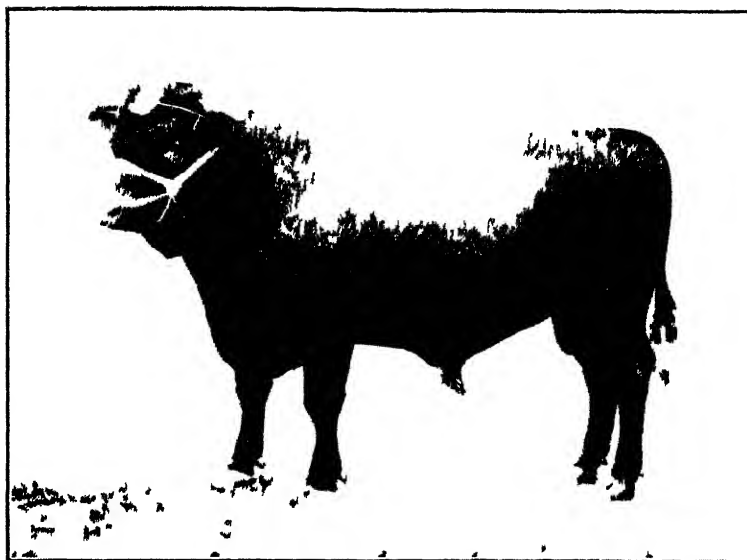


FIG 9—DEVON BULL "POUND COWBOY"
Winner of Champion Prize for best Devon Bull Bristol 1915
Exhibited by MRS A C SKINNER AND SON

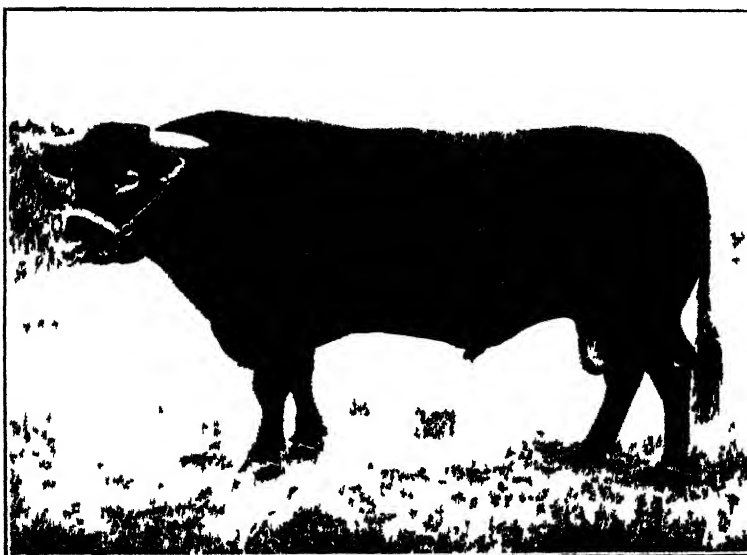


FIG 10—SOUTH DEVON BULL, "LEIGHAM SORT"
Winner of Champion Prize for best South Devon Animal, Bristol, 1913
Exhibited by MR BEN LUSCOMBE



FIG 11—LONGHORN HEIFER, "ARBURY DUCHESS"
Winner of Champion Prize for best Longhorn Heifer or Young Bull, Bristol, 1913
Exhibited by MR F A N NEWDEGATE M P

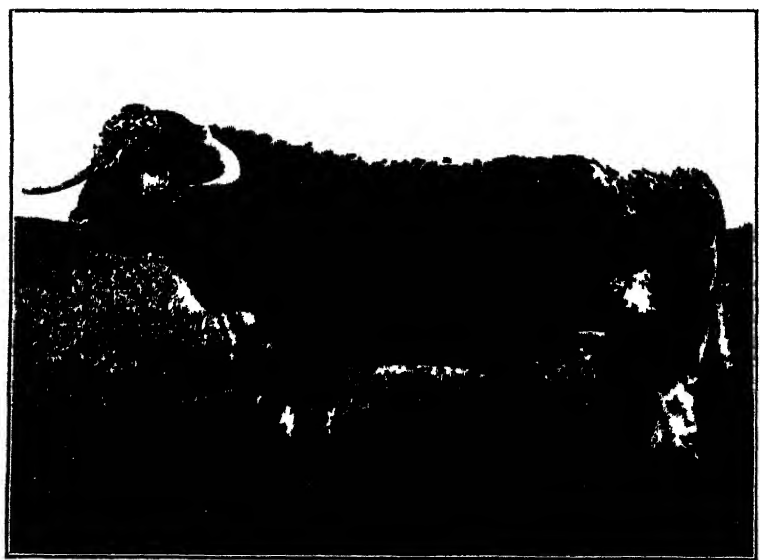


FIG 12—LONGHORN BULL, "EASTWELL EAGLE"
Winner of Champion Prize for best Longhorn Cow or Bull, Bristol, 1913
Exhibited by LORD GERARD



FIG 13—SUSSEX HEIFER, "LOCK HEEDLESS 3RD"
Winner of Champion Prize for best Sussex Cow or Heifer, Bristol 1913
Exhibited by MR W A THORNTON

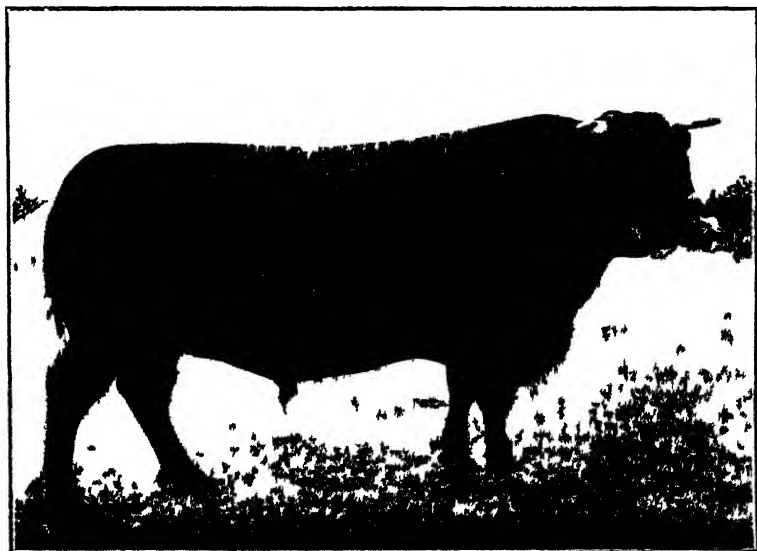


FIG 14—SUSSEX BULL, "APSLEY ALBERT 2ND"
Winner of Champion Prize for best Sussex Bull, Bristol, 1913
Exhibited by MR WALTER GEORGE FIADGATE

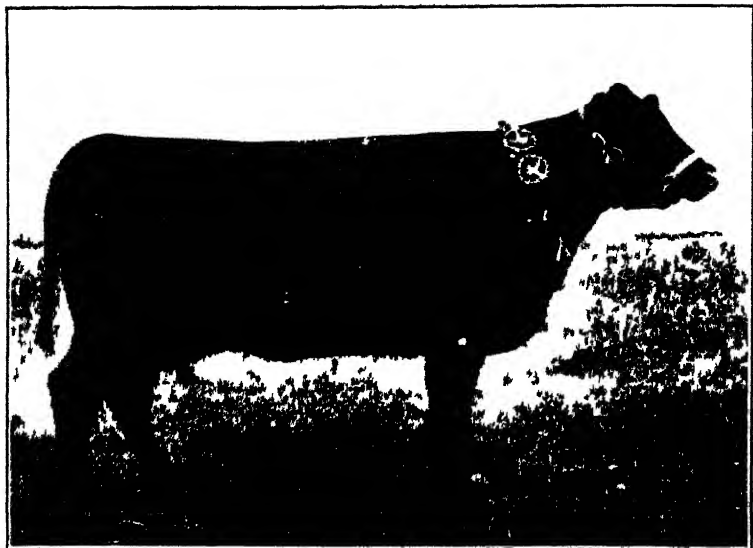


FIG 15—RED POLL COW "CHARMING DAVE 12TH"
 Winner of Champion Prize for best Red Poll Cow or Heifer, Bristol, 1913
 Exhibited by Mr. GEORGE HOIT WILSON

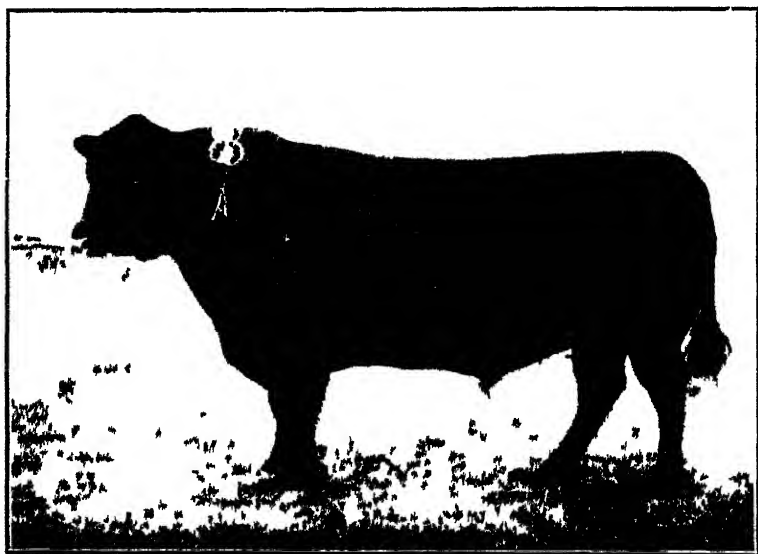


FIG 16—RED POLL BULL, "HONINGHAM ALCFSTER"
 Winner of Champion Prize for best Red Poll Bull, Bristol, 1913
 Exhibited by THE RT HON SIR AILWYN E FELLOWES, K C V O



FIG 17 — ABERDEEN-ANGUS COW, "ITALA"
 Winner of Champion Prize for best Aberdeen Angus Cow or Heifer Bristol 1913
 Exhibited by MR G D FABER C B MP

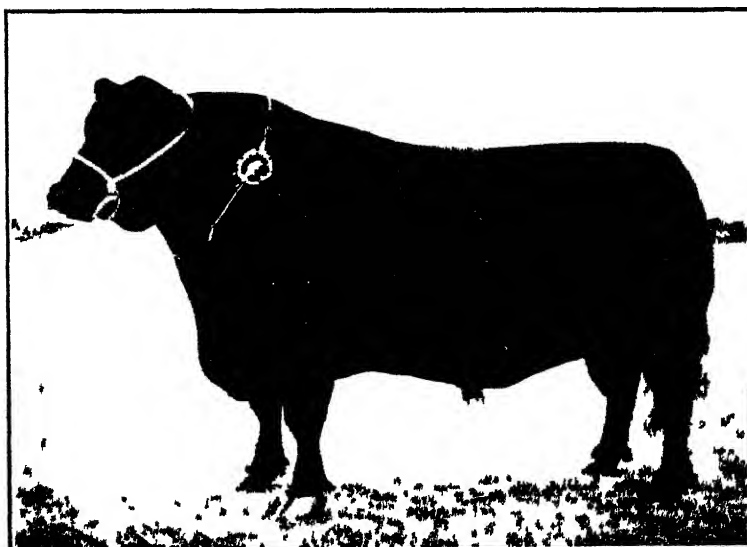


FIG 18 — ABERDEEN-ANGUS BULL, "EIMHORE"
 Winner of Champion Prize for best Aberdeen Angus Animal Bristol, 1913
 Exhibited by VISCOUNT ALLENDALE

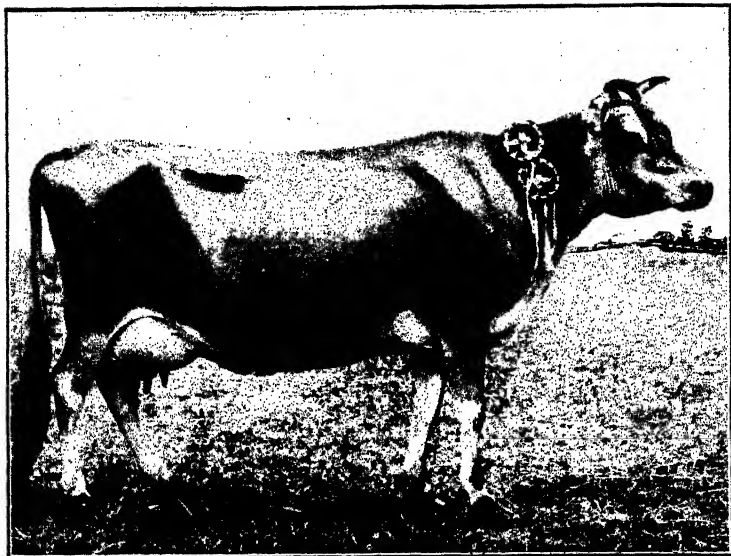


FIG. 19.—JERSEY COW, "LA FRANCHISE 3RD."
Winner of Champion Prize for best Jersey Cow or Heifer, Bristol, 1913.
Exhibited by MR. ALEXANDER MILLER-HALLETT.



FIG. 20.—JERSEY BULL, "GODDINGTON WINKS."
Winner of Champion Prize for best Jersey Bull, Bristol, 1913.
Exhibited by MR. ALEXANDER MILLER-HALLETT.

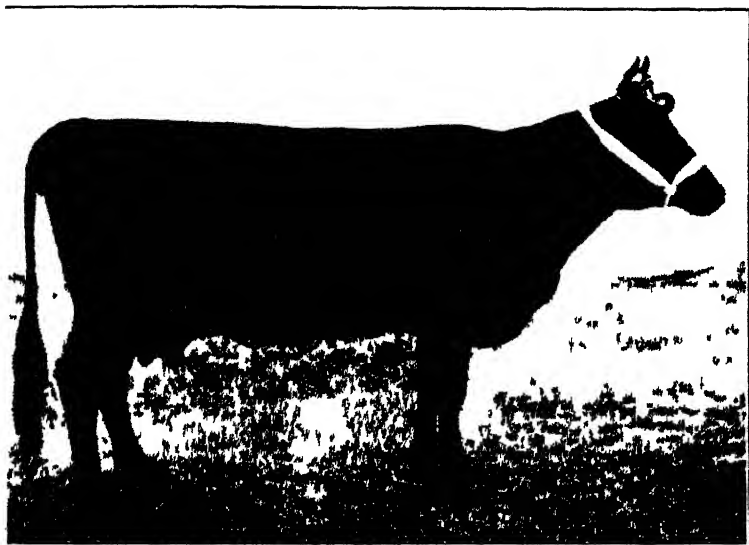


FIG 21—KERRY COW, "MINLEY MISTRESS"
Winner of Champion Prize for best Kerry Animal, Bristol, 1913
Exhibited by MR L CURRIE



FIG 22—DEXTER BULL, "JACK ROBIN."
Winner of Champion Prize for best Dexter Animal, Bristol, 1913
Exhibited by HIS MAJESTY THE KING.

Herefords.—The entry of the breed at Bristol was good, but there were several absentees, as animals had been sold and shipped previous to the Show. Class 124, bulls calved in 1908, 1909, or 1910, was a good class containing several Champions of previous shows. The winner, *Quarto*, a massive, active bull with quality, obtained the Champion as the best bull exhibited (see Fig. 7). *Avondale*, a nice even-fleshed dark-coloured bull, was second. The prize winners in the two-year-old bull class were animals of great merit. *Shucknall Victor*, the winner, is a heavy-fleshed good type of a sire. The prize takers in the yearling classes were well grown and very promising for future shows. In three of the female classes entries were short. The winning cow and Champion as best female (see Fig. 6), *Shelsley Primula*, was a nice even cow of good colour, with a grand udder—a most important point at present in these days of milk demand. *May Morn*, first prize winner and reserve Champion in the three-year-old class, is a big well grown heifer and very promising as a breeding cow. The winning two-year-old, *Misty*, was an easy winner, with good flesh and nice mellow touch. Yearling heifers, Class 123, had a larger entry; the four prize takers were all good, and it was a matter of opinion to place them, all having been winners at previous shows.

Devons.—Excepting the old bulls, there was strong competition in all the classes, which were each of high merit; but some of the heifers, in the Judge's opinion, had been rather overdone to be of much value for breeding purposes hereafter. The dairy class was particularly strong, and spoke well of the breed as good milkers.

South Devons.—There was a good show of this breed of more than average merit. In the old bull class all the exhibits were grand animals, and the competition for premier position was very keen. The class for two-year-old heifers was a grand one, and the whole lot were commended. The young bull class produced some grand youngsters, good in colour, showing plenty of growth with excellent quality. The exhibits were uniform in colour, and with good coats; and the whole of the exhibitors are to be congratulated on sending such a grand lot of this breed, well illustrating their rent-paying capabilities both as to their heavy milking qualities and for the production of beef of the very best quality.

Longhorns.—The show of Longhorns, on the whole, was indeed a very good one, and the Judge was very pleased to find such fine, typical animals of this breed, which is very fast improving, and is a great credit to its breeders, being in all twenty-nine in four classes. The winner in the cow class showed excellent milking qualities, rather low in flesh, but

milk must be encouraged. The second prize cow was a very good animal ; in fact the whole class were mentioned.

The winner in the class for heifers was a fine youngster that will certainly be heard of again. She was awarded the Challenge Cup (see Fig. 11) for the best heifer or bull in the young classes. The winner in the bull class, a grand animal, very massive and of beautiful type, was awarded the Challenge Cup for the best bull or cow (see Fig. 12). The second animal in this class was a fine bull, very big and wide, and the whole class was good. There were six bulls in the yearling class, which contained some very useful animals of excellent merit.

Sussex.—The Judge expresses regret at the poor entry, but no doubt the distance from the three counties—Sussex, Surrey, and Kent—where they are mostly bred, was greatly responsible for so few coming forward. Only three animals put in an appearance in Class 148. *Lock Heedless 3rd*, the winner, was a beautiful type of the breed, standing right away from anything else in the class, and winning the female Championship easily (see Fig. 13). Class 149 contained some useful animals of the breed, but nothing special. *Apsley Albert 2nd*, a really grand bull, was an easy winner in Class 150 and male Champion (see Fig. 14). There was nothing special in Class 151. Five good animals were shown in Class 152, the first in the class being a promising youngster, likely to make a good bull.

Welsh.—The classes of Welsh Black Cattle were well filled. In Class 153 there were four exhibits of very good cows, led by a fine useful breeding animal. The second prize taker was younger and of a very nice quality. Class 154 contained five entries. The winner was a very fine specimen of the breed, of heavy scale and evenness of form, and was followed by two very typical animals. Class 155, with seven entries, made a very good class of promising young heifers led by a good massive, well-coated heifer. The second and third prize takers also were very promising heifers of rare quality. The four entries in Class 156 were led by a very massive and evenly fleshed typical animal, one of the best exhibited in recent years. The second and third prize takers are really good specimens of the breed. The first prize winner in Class 157 (four entries) is a very promising animal of even flesh, and likely to make a good bull at maturity. The second prize winner is a very good animal of heavy scale and type. Class 158 was a remarkably good one of seven youngsters led by a very uniform and compact bull, which was run very closely by the second prize taker which was very even and typical. The Welsh section taken as a whole was a decided improvement on

those exhibited in former years, both as regards number of entries and uniformity of the type.

Red Poll.—Class 159 was an excellent one of cows, all showing well-formed udders. In this class was found the female Champion, a very large beast of fine quality (see Fig. 15). The first and second prize winners in Class 160 were of exceptional merit, and the class as a whole was good. Class 161 was the best of the Red Poll classes, numbering thirteen entries, of which four were particularly promising animals. Two outstanding good bulls were exhibited in Class 162, viz., a four-year-old and a two-year-old, winning first and second respectively, and afterwards awarded the Male Championship (see Fig. 16) and Reserve for same. Class 163 contained nine yearling bulls, in which nothing of particular merit could be found; in fact, the class was not quite up to the usual standard of quality. Taken collectively the Red Polls were the finest representation of the breed that the Judge has ever had the pleasure of judging at the R.A.S.E.

Aberdeen Angus.—The general quality of the exhibits was good, and with the exception of two-year-old heifers the classes were well filled. A good proportion of the animals shown were outstanding, and it is worthy of note that the leading exhibits in three of the classes took the same position in much stronger competition the following week at the Scottish National Show. The breeding cows comprised a nice class of typical animals, and the one-year-old heifers were excellent. The aged bulls presented a fine appearance—with not a weak one amongst them—while the leader was one of the best specimens that has been seen for years. The two-year-old bulls were also very uniform and good, the first prize one being a large wealthy specimen of more than ordinary excellence. The yearlings comprised a mixed class of useful bulls with nothing outstanding amongst them; still, quite a creditable exhibition.

Taken altogether the show of Aberdeen Angus cattle at Bristol was one with which the breeders and fanciers of that breed had every reason to be satisfied.

Galloways.—As a whole these were exceedingly good. Cows in milk made a level good class. Class 172 was a very fine one; the first and second exceedingly good heifers. Class 173 was one of the best in the females; first, second, and third were very fine heifers. Class 174 was the best of the Galloway section, every animal in it being good—the first and second were especially so. A level good lot of young bulls were found in Class 175.

Highland.—Only two representatives of the breed were present—both bulls—which the Judge states were “good.”

Ayrshires.—In Class 178A, for cows and heifers in milk, the first prize was won by a grand cow that had newly calved. A very much smaller animal with the making of a good milker was placed second, closely followed by the third prize winner, also a good animal. All the exhibits that received commendation were of high merit. A grand cow, in which was combined everything that could be desired, easily won the premier award in Class 178B (for cows and heifers in-calf). The second, a smaller cow but very “milky” looking, was well worthy of her position. A handsome young cow was placed third, but she was too far from calving to be seen at her best. A young bull of a very high order deservedly won first place in Class 179, the second prize being secured by an older bull, who did not possess the same sweet quality as the winner.

British Holsteins.—For a second appearance at the National Show, and considering the breed is not a local one, the exhibition of Holsteins at Bristol was distinctly creditable, and should encourage breeders to further efforts. Forty-one entries were recorded in this section, of which thirty-five attended the show. The old female class brought forward eight animals, all splendid dairy cows, but the type was not as uniform as could have been desired. The winner, *Stanfield Phoebe*, was a big framed, milky matron, carrying a large bag, which, however, was not quite level. The second prize winner had plenty of size and character, but the one placed third was not so fresh as the others.

Garton Fullpail, shown by Mr. John Bromet, whose exhibits also won first and second in the cow class, was an outstanding winner in the in-milk heifer class, which only produced three animals.

Two nicely grown typical heifers, in grand condition and well brought out, scored for Mr. Adam Smith in the heifer class, the winner having the better head, and being straighter at the top. The exhibit placed third was also a sweet promising specimen of the breed.

Premier honours in the old bull class went to *Monkton Man of Kent*, Mr. Henry T. Willett's big lengthy sire, which was not quite so well marked as the second and third prize exhibits, these, however, being handicapped by being much younger than the winner.

The young bull class was the largest and best of the section, a pleasing indication that breeders are going steadily ahead. A big, strong, well-ribbed animal, shown by Sir Peter Walker, Bart., was deservedly first, his only fault being that he might possess greater length. The beasts placed second, third and fourth were all very useful, while several that did not get into

the awards showed much promise. The very young bulls were at a disadvantage in having to compete with much older ones, but as a whole there was little to find fault with in the class. Taken altogether the show of Holsteins was excellent, and a great improvement over the initial showyard venture at Norwich.

Jerseys.—The old cow class produced a large entry and contained many excellent specimens of the breed, the winner here taking the Female Championship (see Fig. 19). Class 188 was not so well filled as at former shows. With the exception of the winners the exhibits lacked quality, but the first prize winner was placed reserve for the Female Championship. The two-year-old class was better filled and there were a few promising young cows. In Class 190 the animals were not of such great merit as the Judges have seen at former shows. In the class for English-bred Jerseys the competition was not so keen as might be expected. Class 192 was headed by a well-known winner, who also took the Championship in the male classes (see Fig. 20). Class 193 was not up to the average of former shows, although the winner was of considerable merit, taking Reserve Championship. A few promising young bulls were shown in Class 194, but the remainder were somewhat inferior.

Guernseys.—Class 196 contained a few very good cows. The winner was of a particularly good type, with well-formed udder, and she was followed closely by a more aged cow not quite so good in formation of udder. In Class 197 a good dairy type of cow was first, the second being a very promising young cow, a trifle thick on shoulders; the third prize winner was inclined to be a bit beefy. The winner in Class 198 was too high on leg, but a good young cow; a neat cow rather thick on shoulder got second, a good all-round heifer taking third prize. In Class 199 the first was a finer bred calf than the others, but they were a very even lot, though most of them thick in hide. The first prize bull in Class 200 was in fine show form, and well handled, but was followed very closely by the second and third prize winners. An even lot of young bulls were shown in Class 201, with not much to choose between the prize winners and those who got reserve and highly commended. Taking the section as a whole, they were a very fine lot, and did great credit to the exhibitors. The Judge states that the Guernseys ought to be better known amongst farmers in England, as they are the richest breed in the world, and would, in his opinion, improve the quality of milk and butter throughout the country.

Kerry.—Class 203 (cows) was an excellent one in numbers and quality. The winner was easily first, almost ideal in shape

for dairy cows, with perhaps the straightest top line ever seen on a Kerry. beautiful head and neck full of quality, and a silky udder of good shape. The animal placed second was not so level as the first and somewhat more robust in build. A cow with a good Kerry head and horns was third. Class 204 had two entries only. A heifer of very good shape and quite excellent dairy indications was first in Class 205. In the bull Class 206 the first prize went to a useful bull of good Kerry type, his horns and head especially being correct.

Dexters.—Class 208 was quite high-class. A red cow which has won many prizes during the last few years was again first, and closely run by the second, a cow with a most capacious and excellently shaped udder, the bag being both wide and long with the teats well and squarely placed. Class 209 contained nine entries, and first place was taken by a heifer which had not yet calved, but her shape and make were so exceptional, and the udder promising, that the Judge thought her quite deserving of the premier award. She was followed by another which had not yet calved, also a compact well made heifer. Class 210 contained thirteen entries. The first prize went to a heifer of exceptional quality and style. A heifer of good Dexter character was second. In Class 211 (bulls) there was no difficulty in selecting the winner, a bull of wonderful shape, character and quality, and as near as possible a model of the breed. A straight bull full of quality was second.

The Challenge Cup for the best Kerry bull or cow was awarded to No. 1643 (see Fig. 21), while the bull No. 1658 was placed Reserve, and that for the best Dexter bull or cow to the bull No. 1699 (see Fig. 22).

SHEEP.

With a total of 736, the Sheep were two more than the number entered for the Doncaster Show last year. Hampshire Downs were the most numerous with 94 entries, being closely followed by the Kent or Romney Marsh with 87, and the Shropshires with 75.

Primitive Breeds.—A special exhibit—not for competition—consisted of some fifty specimens of Primitive Breeds of Sheep, made by Mr. H. J. Elwes, F.R.S., and Professor J. Cossar Ewart, F.R.S., to show the original sources, so far as they exist at the present time, from which the modern breeds have sprung.

The Sheep shown were collected and bred at Colesborne Park, Gloucestershire, and at Fairslacks Farm, near Penicuik, Midlothian, now in the hands of the University of Edinburgh, with the object of making experiments in crossing, and in producing fine wool, small mutton and fat lambs. They had

been bred and wintered on poor grass at a high elevation, and in a very cold and late situation, and had not been housed or, with a few exceptions, had received any additional food. Some of these breeds have for very long periods been kept in parks in a semi-wild condition, and have proved their remarkable hardiness and ability to remain healthy under conditions which improved sheep cannot endure.

Cloth made from the wool and fleeces of most of the sheep exhibited were shown in the Agricultural Education Exhibition building.

The Breeds exhibited were as follows :—

1. Ram, ewe and lamb of the *Old Horned Wiltshire* Sheep, from which the modern Dorset Breed is probably descended.
 2. Ram, ewe and lamb of the *Old Horned Norfolk* Sheep, from which the modern Suffolks have been produced by crossing.
 3. Ram, ewe and lamb of the "*Piebald*," "*Spanish*," or "*Spotted*" Sheep; kept pure in English parks for over 150 years.
 4. Ram, ewe and lamb of the semi-wild *Soay* (*St. Kilda*) Sheep; the nearest living representative of the wild *Mouflon* of Sardinia.
 5. Ram, ewe and lamb of the *Shetland* Breed.
 6. Ram, ewe and lamb of the *Manx* Breed.
 7. Ram, ewe and lamb of the *Hebridean* Four-horned Breed, which has perhaps contributed to the making of the Scotch Black-faced Breed.
 8. Fat-rumped *Syrian* ewe and lamb by *Old Wiltshire* ram.
 9. Fat-rumped *Syrian* ewe and lamb by *Afghan* Fat-tailed ram imported by the Marquess of Bute.
 10. "*Siberian*" ram, ewe and lamb of uncertain origin, but probably nearly related to the Shetland Sheep. [The fine wool which formed the under coat of the dam of this ram was valued at 5s. per pound.]
- Also ewes of the *Cheviot*; *Blackfaced* × *Black Welsh*; *Wiltshire* × *Soay* Breeds; and *Southdown* × *Soay*; with lambs by various sires.

An illustrated guide giving an account of the various breeds was on sale during the Show.

Oxford Downs.—The Judges considered Class 216 (shearling rams) the best exhibition of shearling rams that has been at the Royal for many years, the prize winners being followed up by some very good specimens. Class 217 (single ram lambs) brought out some fair specimens, but backward in condition.

The prize winners in Class 218 (three ram lambs) were quite outstanding, and it was altogether a very good class. Three yearling ewes also made a good class. The pens of three ewe lambs (Class 220) showed good character, but the animals were backward in condition. Taken as a whole, the Judges thought the exhibits did great credit to the Oxford Down breeders.

Shropshires.—Class 221 (two-shear rams) was of good average merit. The leading sheep showed scale and quality, particularly the first and second winners, which headed the class somewhat easily. Shearling rams (Class 222) were somewhat uneven in character, but the leading sheep were good, particularly the winner—full of good flesh, wool, and typical “Shrop” points. In the five-shearling rams Class (223) nine pens were forward, and the class throughout was good. The winning pen were well matched, true to type, with good flesh, skins, and wool. The other leading pens were good, but not quite so stylish, and some a bit wanting in “finish.” The winning pen of three ram lambs in Class 224 were very full of “bloom,” with plenty of scale and quality. Some other typical pens were shown. The first and third pens of three shearling ewes were rather on the small side, but very full of flesh and quality. The second pen had somewhat larger scale, but lacked a little in colour. This was a fair class on the whole. Class 226 (three ewe lambs) was small, but the winning pen was very well brought out, showing plenty of size and nice quality. The other pens were also very “typy.” On the whole the Shropshire classes were well shown, but the Judges venture to advise breeders to be careful not to overlook the question of size, and in doing so to sacrifice the important essentials of a good mutton sheep to the ultra-faddist ideals of the showman.

Southdowns.—All the classes were well filled with the exception of that for shearling ewes. In Class 227 (two-shear rams) were found some very good rams. No. 1852 was awarded first in class and Champion ram on account of its great depth of flesh, with good wool, and having what a ram should have—a masculine head. No. 1857 well deserved second place; it was a very even sheep with very good wool, but lacking a masculine head. There were nineteen entries of shearling rams in Class 228, the majority of which were a very good lot, particularly No. 1868, which well deserved first place. This ram was also reserved for the Champion. No. 1869, a very nice even sheep, was second.

In Class 229 (three shearling rams) there were nine entries. In this class were found some very evenly matched sheep, particularly No. 1886, which were well to the front. Nos. 1885 and 1887 well deserved second and third places respectively.

In Class 230 (ram lambs) some very promising sheep were exhibited. Only five entries were made in Class 231 (three shearling ewes), but they were a beautiful lot. No. 1900 well deserved the first prize and the Silver Medal for the best pen of ewes or ewe lambs. The Judges had no difficulty with Class 232 (three ewe lambs) in placing No. 1912 first; they were three very good lambs. They were also well worthy of the position of Reserve for the best pen of ewes or ewe lambs.

Hampshire Downs.—Class 233 was only a moderate one of two-shear rams. In Class 234 the first was a good showy ram of great quality and good type, the wool being good, the second prize following very close, a heavier and more massive ram. After the first three rams the class was moderate. Class 235, for single ram lambs, was strong in numbers. After the first, which stood well ahead of the rest, there were several rams running each other very close. The winner in this class took the Championship. Class 236 also was a strong class of three ram lambs to the pen, with nothing outstanding, which made the decisions harder to arrive at, the merits being very even. The first in this class was Reserve for Championship. Novice ram lambs (Class 237) were very good, comparing favourably with the open class. Class 238 was the strongest class of shearling ewes the Judges remember seeing at a show, the merit was excellent, the winners being a beautiful pen of ewes. Class 239 was very uniform all through, the first of excellent type and quality, the second close up but not quite so nice over the crowns, the third and fourth following close. In Class 240 (novice ewe lambs) the five entries present showed quality and breeding good enough to compete in the open.

Suffolks.—Two good sheep were shown in the two-shear ram class, the winner possessing especial merit. Class 242 (shearling rams) contained three remarkably fine rams of good scale. Ram lambs made a very good class, being well-grown and of smart appearance. The shearling ewes shown were very true to type, good in colour and wool. The ewe lambs were remarkably well grown, very smart in appearance, with good wool and of good colour. The Judge remarks: "It is much to be regretted that this most popular and most serviceable breed, which thrives under any conditions, should not have been better represented, but it is partly accounted for owing to the distance from Suffolk."

Dorset Downs.—Although the entries were small, taking them as a whole they were a very good lot, and, in particular, mention may be made of both the shearling rams and ewes. The ram lambs were not as matching as the Judge would have liked to have seen them.

Dorset Horns.—In Class 250 for yearling rams the first prize went to No. 2047, a sheep with plenty of strength with good flesh and wool and one that should make a valuable stud ram. The second prize went to No. 2045, a perfect sheep full of quality, but he had not the size or strength of the winner. In Class 251, for ram lambs, the first prize went to No. 2055, a very strong good fleshed pen which might have had better heads. The second prize was awarded to No. 2053, a nice quality pen with correct heads, and the third prize to No. 2054, a pen with good wool and flesh, and which would have been placed second had they matched better. In Class 252, for yearling ewes, after the first award was given to No. 2058, a well-matched pen of good type, flesh and wool, there was a close run for the other positions. In Class 253, for ewe lambs, premier honours were won by No. 2067, a well-matched pen, good in flesh and wool and with good heads. The Silver Medal given for the best exhibit in the above classes was secured by No. 2058, the winning pen of three yearling ewes, they being perfect in type and well matched.

Ryeland.—The exhibits in these classes were quite up to the usual standard of merit. Class 254 (two-shear rams and upwards) only contained two entries. The first prize winner was a sheep of very good type, with legs well set. The second was a nice sheep with a good fleece but not quite so typy as the former. Class 255 (shearling rams) was a better filled class than the previous one, and contained some very good specimens of the breed. The first prize ram was a nice masculine sheep, with gay carriage and good in fleece. The second prize ram possessed a very nice coat and was typy. The third prize ram although smaller than some of his comrades, was also typy and had nice wool. In Class 256 (ram lambs) the first prize winners were a very nice evenly matched pen, showing good character and gay carriage, with very shapely hind legs. The second pen were also a very good lot, with nice coats and character but did not exhibit the same smartness and uniformity as the former ones when out of the pens. The first prize winners in Class 257 (shearling ewes) were a smart typy uniform lot with good fleeces. The second prize winners were also a well-matched pen with good coats. The third prize pen, although smaller than their rivals, were also of very nice type, and fine in the fleece.

Kerry Hill (Wales).—In Class 258 (rams, shearling and upwards) the winner, a level hard yearling, was very compact but somewhat wanting in his underline and bone. The second, a three-shear ram, was built on rather better lines but was considerably worse for his wear, and so had to give way to the younger sheep. The winners in Class 259 (shearling

ewes) were the most matchy pen in the class, with good fleeces and well ribbed up. The second made a showy pen with more scale than the winners, but one of them drew back considerably. The reserve trio were a nice typical pen of the breed, but with the same drawback as the former, which was really the main fault throughout the class, as they all showed the best of breeding.

Lincolns.—Shearling rams were decidedly below the average, most likely due to the unfavourable season, and the wool was not up to the standard. Two-shears were well grown, but were not to their usual standard with regard to wool. The lambs were very nice, and showed a good deal of character. The yearling ewes in their wool were very good and quite kept their repute, the wool being excellent.

Leicesters.—The shearlings in Class 267 were very good, particularly the two winning rams, having large frames, well sprung ribs, good skins, and the fine character of a Leicester. In Class 268 the first winning pen of ram lambs was very evenly matched, with good skins, flesh, and heads, and much the best in the pen. There were only three pens shown in Class 269 (shearling ewes), the first and second pens being very fine types of Leicester sheep. In Class 270 were shown three pens of Leicester ewe lambs, the two pens, first and second, having good skins and frames, well matched with good heads.

Border Leicesters.—The section as a whole was a very fair representation of the breed. Only four rams over two-shear were shown, but the prize-winners were good. The shearling rams and gimmers were both strong classes, more especially considering the distance from their headquarters. There were two empty pens in the second class and three in third.

Wensleydales.—In the aged ram class there were four entries, and it was generally remarked there had not been four such good rams shown at the Royal for a good many years. The executors of the late T. Willis took the lead with a fine typical ram, with a good head, even fleece, and plenty of scale and substance. Mr. J. W. Greensit ran the winner very close with another fine powerful ram, having a good head, good back, and well on his legs, but hardly quite so good in wool. Lord Henry Bentinck came third with a big strong ram of considerable merit, but rather deficient in legs.

In the shearling ram class there were four entries, and the executors of Mr. Willis again took the lead with a nice quality ram, with a good head, even fleece, and well set on his legs. Lord Henry Bentinck came second with a good fleshy ram, of considerable merit, and Mr. Greensit took third with a ram of good quality, but which hardly met the eye so well as the two former rams.

The class for three shearling rams brought out twelve sheep of good quality, and the Judges were occupied a considerable time in placing them on account of the unevenness of the pens. The executors of Mr. Willis won first with a fine trio of good quality rams, matching well with heads, wool, and general character. Mr. Greensit made a good second with three rams, good in flesh and even in wool, but not quite so matchy with their heads. Lord Henry Bentinck came third with three rams splendidly matched in wool, but rather short of handling, and one of them short of colour about its head. In the shearling ewe class there were five entries, and here Lord Henry Bentinck's ewes came clearly to the front. The leading pen was undoubtedly the best matched pen of the section, having grand heads, even fleeces, good in flesh, and well on their legs. The second exhibit of Lord Henry's, possessing all the characteristics of the winners, was well worthy of second honours, and the executors of Mr. Willis came third, with three sheep of considerable merit, but not quite so even in some respects as the two former lots.

Lonks.—The class for rams one year and over was represented by a poor selection, Mr. Edward Smith taking first and second prizes. In the shearling ewes class again the representation was poor, Mr. Smith gaining the first and second prizes. In this class one pen shown by Lady Thursby contained a fairly good hogg, fully equal to the prize winners, but the remaining two let down the pen, one of which failed in body and carriage and the other in its wool, and both were short of wool about the neck and head.

Derbyshire Gritstones.—Rams, one year and over, made an excellent show, Mr. Wheelton taking first and Reserve prizes with some splendid animals. The winner of the first prize will be difficult to beat. The class for pens of three shearling ewes also had a very good show, the stock shown in the Gritstone classes, the Judge reports, is a great improvement upon that shown two years ago.

Kent or Romney Marsh.—The Judges consider it a matter for congratulation that the Kent or Romney Marsh Sheep, with 87 entries, were the largest long-woolled breed, and, with the exception of the Hampshire Downs, the strongest sheep classes in the Show. This is especially noteworthy because two largely exhibited flocks of the breed were dispersed in 1912. The competition in all the classes was close, but the Judges had no hesitation in awarding the Championship prize to the first prize two-year-old ram, one of the best specimens of the breed yet produced, but a little on the fine side with his wool. The symmetry of the sheep shown in the five-ram class was

particularly to be commended. Of the ram tegs, the first, second, and third prize sheep belonged to the same owner, and were remarkably fine specimens of the breed. The same may also be said of his shearling ewes which gained first and third prizes. The second prize pen were three ewes of excellent form. The whole of the sheep were of good typical character, this remark applying especially to the shearling rams. Without doubt this breed has now become much more uniform, and the sheep generally are well covered with a heavy even fleece.

Cotswolds.—Both for numbers and quality this breed's exhibits were much above the average, the shearling rams and the shearling ewes making extra good classes and very well shown. The leading animals in the shearling ram class were big bold sheep with size as well as quality, very firm under hand, with good wool. The shearling ewes were the strongest lot the Judge had seen out for many years. The first was a sweet pen, very matching with the best of wool, and firm in their mutton. The second and third pens were very big heavy sheep much above the average, not quite so matching as the first, but a very good class. The ram and ewe lambs were good quality, splendid wool, but not quite so forward.

Devon Longwools.—Rather a small entry of this breed was made, but the sheep that were there were very good. The rams were strong with good wool and plenty of bone, and the first prize yearling ewes made an exceptionally good pen.

South Devons.—On the whole the South Devon Sheep were typical of their breed, and the numbers were somewhat satisfactory. The first prize ram and ewe lambs were the best seen by the Judge for many years, which speaks well of the first prize two-shear ram as a stock getter, he being the sire of both pens. The first prize yearling ram stood away from his opponents, having a good head and neck, depth of flesh, good wool, and big bone. The two pens of yearling ewes were good, but there ought to have been more entries, as the registered flocks number about 240.

Dartmoors.—Though not numerous, Dartmoors were a prominent feature among the various breeds of long-wool sheep. The splendid animals reared in their native wilds on Dartmoor and the fringe of highland surrounding it were a credit to the showyard and to the exhibitors of this valuable breed covering one-third of the county of Devon. The Judge notices a great improvement since the breed was registered four years ago. Their constitution and long lustrous of curly wool attracted much attention and admiration.

Exmoors.—There were eight entries in the three classes, the old rams, also the ewes, being very good specimens, but the hogg

rams were rather weak. The winner in this class was far ahead of the other two.

Cheviots.—The first and second prize old rams belonging to Mr. Jacob Robson were twin brothers and sired by a sheep of his own breeding. The first prize ram was an outstanding sheep and won easily. He has a good head and skin with plenty of style and substance. Mr. John Robson's third prize ram was second at Edinburgh and Inverness as a shearling. The shearling rams were a useful class, Mr. John Robson being first and second with well skinned sheep. Mr. Jacob Robson was third. Mr. John Robson was first for gimmers with an excellent specimen showing quality and substance. She was third at Edinburgh. Mr. Jacob Robson was second and third with two smart twin sisters.

Herdwicks.—These sheep were few in numbers, but those placed before the Judge were all of fine breeding quality. Class 309 was headed by a splendid aged ram, having a fine strong face, with well set horns, a good handler, with nice quarters, strong bones, and good wool. The second prize ram was very smart, though a little weak in face and drooped in hind quarters, but was very good on his legs with strong bones. Class 310 only produced two lots. The first prize was awarded to a beautiful pen, with strong heads, good handlers, very good in wool, a very smart trio. The second prize pen was rather small.

Welsh Mountain.—Both classes of Welsh sheep were of great merit, the ewe classes especially so. The entries were good, but were confined to North Wales. The first prize animals were very true to type.

Blackfaced Mountain.—These classes were very strong indeed, seeing the Show was so far south. Class 313 was headed by a perfect type of a Mountain ram, with strong face, good colour, fine quality wool, well-set horns, fine hindquarters, strong bones, a great handler, and very smart when let loose. The second prize ram was a massive sheep, but weak in neck and slack behind shoulders. The third prize was of good stamp but was four-shear, and age was telling on him. The first prize in Class 314 was awarded to a typical type of shearling ewe. Although a trifle small, this animal was a great handler, with a nice head and good wool. The second was also a smart sheep, but rather weak in bones.

In Class 313 the Judge had some difficulty in coming to a decision as shearling and aged rams were all shown together. Shearling rams have no chance against aged rams, as they are much more furnished. There was also one ram shown in old wool, which made it still more difficult.

PIGS.

The entries in this department, though less than those for the Shows of the two preceding years, were well up to the average, the Large Whites leading with 135 entries.

Large Whites.—The exhibits in Class 315 were a very good lot. *Worsley Turk 28th* led the way—a typical boar of fine length and scale, afterwards awarded the Medal for Champion boar. The second was a big, thickly-fleshed pig of good type. The third also was a boar of nice type. Class 316 was another good one, the winner being found in a great deep pig with not much coat but full of quality; the remainder all good useful types. No. 2492, which was placed first in Class 317, was a good, straight boar of first-class quality that won well in a fair class. There were thirty-five entries in Class 318, and the quality varied. No. 2504 won easily, having fine size and quality. No. 2507 made a good second, being of the same type, though hardly the size of the winner, but should develop. No. 2498, third, was a good type, and the fourth, No. 2528, a lengthy boar, not so deep as the leaders.

Class 319, old sows, was a collection of talent. No. 2541, though giving away a lot in age to the others, showed remarkable quality, and later on was able to gain the Gold Medal for the best sow. No. 2544, a thick, deep sow that had an unbeaten record last year, had to put up with second in a strong class. No. 2537 was a sow of good quality and nice character, and it was a near thing between her and No. 2534 as to which got the Reserve ticket. The others had to be content with H.C. cards. In Class 320, No. 2556, a good, deep, well-fleshed sow, though a little coarse in front, took first place, and she afterwards got the Reserve ticket for the Medal. No. 2547, a big deep-fleshed sow of nice type, but rather short of hair, came next. The rest were strongly in evidence. Class 321 was a good, useful class of juniors, headed by No. 2580, a typical gilt, full of quality. Nos. 2583 and 2584, the first and second in Class 322, were good typical gilts, full of quality, being of one litter. The rest did not please the eye so well, neither were they so matchy, which made it difficult to adjudicate.

Middle Whites.—The Judge found the classes fairly good on the whole. The Champion sow was his idea of a Middle White, so true in head, underlines, ribs and hams, whilst her legs and feet were about perfection. She was covered with a beautiful coat of fine silky hair. The Reserve Champion was a useful young sow, but lacking the fine characteristics of her victor. The pens of three youngsters wanted character, and were too much forced for age. The boars were fair, nothing special.

Tamworths.—In Class 329, boars farrowed 1909-10-11, two useful pigs won the first and second prizes. The first prize

winner in Class 330, boars farrowed 1912, was a good coated pig, well shown and of correct type. while the second and third were out of coat, having too many black spots. It was not, on the whole, a good class. A good entry, boars farrowed 1913, was made in Class 331, and at least six very good young boars were shown. A lengthy, well-grown pig of high quality was first. The second was also a first-class pig. Several useful breeding sows were shown in Class 332, but there was nothing outstanding. The first prize sow was well brought out, though somewhat fat for breeding purposes. The winner in Class 333 (sows farrowed in 1912) was a typical Tamworth of great merit. She also takes the Champion Gold Medal as the best in the section. Several other really good sows were found in this class. Five pens of three sows farrowed in 1913 were forward in Class 334, three of which were well grown, well shown, and of the right sort.

Berkshires.—The exhibits in these classes numbered only fifty-three in six classes, but the general quality was quite up to average. In Class 335 (containing five old boars), No. 2695 won easily, and was followed by another good pig, No. 2696, Class 336, in which were exhibited twelve boars of 1912, was fair, with no outstanding winner. Class 337 (boars of 1913) were a very even lot numbering thirteen. No. 2713 won, closely followed by No. 2720. Four real good sows were found in Class 338. In Class 339 (sows of 1912) there were eleven exhibits, No. 2740 being an outstanding winner, with her great scale, wonderful hams, and general smoothness. This was the best class in the section. Eight pens of three 1913 sows were forward in Class 340. No. 2747, the winners, were well-matched and of best quality. There were many good individual young sows in this class. No. 2740 easily won the Champion prize and the old boar No. 2695 was Reserve.

Large Blacks.—Class 341, boars farrowed in 1909, 1910, or 1911, had eight entries, headed by *Drayton King*, an excellent specimen, long, wide, deep and level with neat shoulders and well sprung ribs. His forelegs might be straighter, the hams more developed, but he won easily, and was finally a worthy Champion. *Drayton Disappointment* was second, of immense size and scope, failing in girth behind the shoulders, *Drayton Dandy*, third prize, was a square pig of medium size and good quality, but had not the substance of the first and second, and was too erect in coat. Class 342, boars farrowed in 1912, contained two good but not outstanding boars. *Sudbourne Admiral* won, a long level boar of nice quality and correct type. *Drayton Peter*, second, was a thick pig, which might be deeper behind the shoulders and more developed in hams. Class 343, boars farrowed 1913, had nineteen

entries. A large but rather disappointing class, containing three good boars and a number of useful ones. The first prize animal stood out alone, full of quality, and very deep and square. The second, *Bixley Sutler*, was a thick boar of good length, but rather black in skin. The third prize winner was of the same type as the first but narrower and not so deep. Class 344, breeding sow farrowed 1909, 1910, or 1911, was fair, headed by *Lustleigh Marchioness 18th*, a square deep sow of excellent quality and type. She won easily, and was finally Champion sow. *Sudbourne Miss Kitty* was second, very thick and level but rather short and lacking in scope. Third came *Treveglos Lass 6th*, long and typical, with first class hams, but cut in over the loins. Class 345, large black breeding sow, farrowed 1912, was the best of all with ten entries. The winner and subsequently Reserve for sow Championship was *Treveglos Angelina 2nd*, a beautiful sow of superb quality, long, deep, level and typical. Second was *Drayton Annie*, a quality sow of good length with great back and loins and square frame. *Flower of the Valley* was a very close third, a model of symmetry and quality. In Class 346 for pen of three sows farrowed 1913 (nine entries), Messrs. Whitley won narrowly with a very well grown pen, well coated, and with any amount of size and scope, but Mr. F. A. Perkins' trio were beautifully matched pigs of neater stamp, and there was little to choose between them. There were no better matched nor finer quality pigs than Mr. J. Warne's third prize pen, but they were a little short from pin to tail, and less developed owing to youth.

Lincolnshire Curly-coated.—The Judge was pleased to note the great improvement in the several classes, thus demonstrating what can be done by careful breeding in selecting the best animals.

POULTRY, INCLUDING DUCKS, GEESSE AND TURKEYS.

The poultry section at Bristol was the best that has ever formed part of the Royal Show. The entries—a total of 1,436 in 140 classes—constituted a record, and the quality of the exhibits, taken as a whole, was excellent. The work of adjudication was divided as follows:—Mr. C. Sneddon judged the Game and Bantam classes; Mr. Clem Watson, the Langshan, Leghorn, Minorca, Dorking, Yokohama, Brahma, Cochin, Faverolle, Houdan, any other distinct variety, and Yokohama Bantams; Mr. H. P. Mullens, the Croad Langshan; Mr. Stainthorp, the Plymouth Rocks and Wyandottes; Mr. E. A. Cass, the Buff, White and Black Orpingtons; Mr. W. W. Broomhead, the other Orpington classes, Sussex, British Rhode

Island Red, Ancona, Maline, Campine and Japanese Bantams; Mr. J. E. D. Moysey, the White Plymouth Rocks, Ducks, Geese and Turkeys

The *Old English Game* were a grand lot, particularly Black-Reds and Spangles in both old and young classes. The first prize winners were birds of exceptional merit. Indians were good also, but several birds were rough in feathers through having been used in breeding pens. The Moderns were two really fine classes. The first winning Black-Red cock was a real topper and in splendid condition. Same may be said of the hens. The first, second and third were hard to separate, all being good of their colour. The *Sumatra* were strong in numbers and quality, several birds possessing the brilliant metallic sheen on their feathers so much desired. The Midgets were composed of a variety of colours, and contained several birds of a high standard for shape and colour of feathers. Many were very near the standard for points.

The *Langshans* were not a big lot, but of good quality. It would be safe to say that the *Leghorns* were the best lot seen out at this time of the year for a long while, and most of them were in very good condition. *Minorcas* made two splendid classes, while the *Dorkings* were very much above the average both in quality and numbers. *Yokohamas* were well represented in colour, and the entry warrants their inclusion. *Brahmas* and *Cochins* did not come out very well, but the hot weather had brought many of the old birds into moult, hence the owners reserved their entries. French were very strong and many well-known winners ran in competition, while the Variety classes were the biggest seen for a long time, many of them being good enough to hold first place. Barred *Plymouth Rocks* were good classes both in numbers and quality. This breed has improved very much during the last six years. In the barred cock class, the three winners were all remarkable for the fine barring and richness in colour. The winners won on condition. The hen class was one of the best seen. First hen was beautiful in barring and colour, and shown at her best. The second hen was well barred, but not in same condition as first. The third was larger and a little coarser in her barring. Cockerels were another quality class. The first was very finely barred and well forward, the second and third being younger but full of quality. Pullets were not so good in quality except the winners. These were exceptionally good. In the buff cock or cockerel class the prizes all went to adult birds. It was a grand class for quality, being very even in colour and plenty of size. Hens were not so good, the entries not being in good condition with the exception of the winners and they were of very fine quality.

Of the *Wyandottes* the laced varieties did not turn up well in numbers, although the quality in cock, hen and pullet classes were all equal to other Shows. The cockerel class was very moderate and only two prizes were awarded.

White Wyandottes head the classes for both quality and numbers, and the winning cock was soon claimed at 20/. He is a wonderful bird, shown by a novice. The second, third and others in the class were extra good. The white hen class was headed by a Champion which has won prizes at many Shows, including the Crystal Palace. Others of extra merit followed. Cockerels were a good class, although several were a bit off in colour. The winner stood out and was claimed at 8/. 8s. The second was very broad and deep, while the third was looser in colour. Pullets were also a wonderfully good class, and winners not easy to pick out after the first which stood clear away. Black *Wyandottes*, of which there was not a large entry, are getting into fewer hands. But the winners in all four classes were better in colour than usual. The quality of Partridge *Wyandottes* could not be beaten. They were a beautiful lot, all the prizes going to adult birds of very great merit. Columbians turned up well in both numbers and quality. The three winning cocks were beauties for colour and striping. The prizes all went to adults. Hens or pullets were a very fine class, the winners, all pullets, being a charming lot. The class for Blue cock or cockerel shows improvement. The first cock stood out for colour, being free from lacing. Hens were not so good, lacking condition. "Any other colour" *Wyandotte* cock or cockerel made a good class. The Buffs are improving very much. A Buff heads the list, a good one, Silver Pencilled, second, and a Buff third, all of good merit. Hens or pullets good; a grand Buff pullet wins.

Mr. Cass expresses great pleasure at seeing collectively in the twelve classes, comprising Black, Buff, and White *Orpingtons*, so many birds of high quality. Type was generally good, and colour in many cases all that could be desired. The winner in the Black cocks class excelled in type, size, and colour. The other birds in the money were very close in quality. In the class for Black hens the winner also stood far ahead of her competitors. The Black cockerels, as a whole, were excellent. The winning Black pullet was an exceptional bird for quality. Buff hens were a very moderate collection. The winner in the Buff cockerels class was, in the Judge's opinion, the finest specimen of a Buff cockerel he had ever seen, excelling in type, and wonderful evenness and soundness of colour. Buff pullets were excellent in numbers, but quality disappointing. Some grand birds were shown in the class for White cocks. White hens made a good collection, the first and second hens being

of exceptional merit. White cockerels as a class were disappointing, the birds appearing to be very immature. White pullets were a very good class for quality and quantity.

Spangled *Orpingtons* were rather weak, numerically, but the cockerels were a nice lot, and better than the pullets. The entries of Blue *Orpingtons* were most gratifying, while a nicer collection for quality it would be difficult to find at this time of the year. The "any other colour" *Orpingtons* were, unfortunately, poor. The *Sussex* were remarkably good classes and seldom, if ever, has there been a better display out of the county from which the breed took its name. The *Rhode Island Reds* formed the biggest classes in the poultry section; and the quality also was especially high. Both *Anconas* and *Malines* were very good; while seldom has there been such a fine collection of *Campines* at an agricultural show. There were not many entries of *Japanese Bantams*, but the birds on view were of high quality.

The White *Plymouth Rock* section was somewhat disappointing, only two cocks facing the Judge, whilst six females turned up, all of which showed traces of the breeding pen.

The *Waterfowl* section was well filled, and many birds in the young classes were very promising indeed, the winning young *Rouen* drake and *Buff Orpington* drake calling for special mention. In the adult classes nearly all the exhibits were in poor condition, and wanted to moult before being fit to exhibit. The Judge was especially struck with the winning white *Indian Runner* in the adult A.O.V. class—a bird which excelled in every way. The *Blue Orpingtons* showed improvement, and in the Judge's opinion there is a big future for this handsome and useful variety of duck. The *Geese* were in rough feather, very little separating them.

A grand lot of *Turkeys* were on view, the winning cock being exceptionally good.

PRODUCE.

Butter.—The exhibits of butter totalled 135 entries in eight classes. Class 493 (box of 12 two-pound rolls) contained only one entry. The quality on the whole was even throughout, and there were only five exhibits which may be termed as inferior produce. During judging operations the butter was exposed for a time to considerable heat, just long enough to test the extent to which the various samples could withstand the effect of heat. It was noticeable that many of the samples retained their firmness to a remarkable degree, especially so in the case of Nos. 76 and 117, where 99 points were gained out of a possible 100.

Classes 494 and 495 (butters "without any salt") included too many exhibits which contained small percentages of salt,

and if analyses of these exhibits had been taken, it could have been proved that some exhibitors contravened the regulations of competition in these two classes. The slight salting of cream during ripening and the brining of the wooden utensils are sufficient to convey to butter sufficient saltiness to bring out the flavour of the butter more prominently. This is frequently done by exhibitors unconsciously and they are satisfied in their own minds that salt has not been added to the butter.

Cheese.—The Cheddar section was rather disappointing as regards quality, a good number of exhibits were faulty in flavour and weak in texture. Owing to the extreme hot weather, a number of the samples were running whey, a fault frequently found in spring cheese when under abnormal heat temperatures. The prize lots might be described as useful samples, being clean in flavour, good texture, and in appearance attractive and well set up.

The Cheddar truckles were similar in quality to the Cheddars. A number of the samples were plain in flavour, and in texture, tough and more or less of a skim character. The first and second prize lots might be classed as creditable exhibits.

The Cheshires (Classes 503 and 504, white and coloured) were not quite so well filled as usual. The quality of the exhibits in these classes was hardly up to the usual standard exhibited at the Royal. Over acidity and tightness in texture were the principal faults, and nothing of outstanding merit was found. Cheshire cheese very frequently show tightness in texture during the early part of the summer, and makers should guard against produce of this type, which frequently follows full development of acidity in spring milk. The prize lots in the Cheshire classes could only be described as useful samples.

Double and Single Gloucesters (Classes 505 and 506). The entries in these classes were rather more than usual, and the general character of the exhibits was only ordinary as regards quality. A good number of the samples were tight made, and deficient in flavour. Makers of double and single Gloucesters should aim at making a cheese showing richness of texture, as any indication of tightness or over acidity is looked upon as a serious fault in this variety of cheese. The prize exhibits were clean in flavour, of good texture, and well set, showing all the features of fine cheese.

North Wiltshire truckles (Class 507). This was a small class with only three exhibits. The quality was very common, and in consequence the Judges could only see their way to award one prize.

The Stiltons were excellent, and possibly more uniform in quality than any other class in the cheese section. The prize exhibits showed all the features of prime Stiltons, being clean in

flavour, of good colour, and creamy in texture, and in appearance left little to be desired. The first prize lot in this class was quite outstanding.

Wensleydales (Class 509). The cheese in this class were very disappointing in quality, and in consequence the Judges could not see their way to make any award.

Class 510. Caerphilly was rather a heavy class, and the general quality of the exhibits was only average. A good number of the cheese were poor in texture and tight made, which is always a serious defect in a Caerphilly. The prize lots were creditable exhibits, being clean in flavour, good texture, and well set up.

Cider and Perry.—*Dry Cider in Cask*. The ciders noticed in Class 511 were fairly good, but some of the entries were neither of the type nor quality that justified their being exhibited.

Sweet Cider in Cask. In Class 512 there were also some entries that ought not to have been exhibited on account of their bad colour, which was accompanied by either an after-taste or a sickly bad flavour. Only the entries gaining awards were worth noticing.

Class 513, *Cask Cider made previous to 1912*, was better than the previous one, the first prize entry being distinctly the best.

Dry Cider in Bottle (Class 514) was fairly good, and some of the exhibits were excellent, particularly those to which the prizes were awarded, each being of quite a distinct type of vintage.

A better class than the previous one was Class 515, for *Sweet Cider in Bottle*, many of the exhibits being good. The first prize cider in this class was far and away the best cider exhibited in any of the classes.

Class 516, *Cider in Bottle made previous to 1912*, made the best class, containing as it did fewer second rate ciders than any of the others.

For *Dry Perry in Bottle* (Class 517) there was no award.

Sweet Perry in Bottle (Class 518) was excellent. The impression created was that although some nice ciders were exhibited there was nothing of outstanding merit, and the Judges were strongly impressed with the fact that it is still within the power of cider makers to place before the public ciders of greater variety and better quality than has yet been done, bearing in mind the ample opportunity there is for doing so both from the extensive variety of cider apples that are grown and the diverse character and formation of the soils in the various cider counties.

The results of the chemical analyses of the samples for which prizes were awarded are appended :

CLASS 511.—*Cask of Dry Cider, not less than 9 and not more than 18 gallons, made in 1912.*

No.	Specific gravity	Alcohol	Total solids	Acidity	Awards
		per cent.	per cent.	per cent.	
340	1.015	4.30	5.39	.355	1st Prize
342	1.015	4.50	5.26	.429	2nd Prize
338	1.013	3.40	3.99	.566	3rd Prize

CLASS 512.—*Cask of Sweet Cider, not less than 9 and not more than 18 gallons, made in 1912.*

353	1.032	1.95	8.36	.422	1st Prize
365	1.031	3.25	8.92	.600	2nd Prize
369	1.025	3.40	7.50	.375	3rd Prize

CLASS 513.—*Cask of Cider, not less than 9 and not more than 18 gallons, made previous to 1912.*

378	1.016	5.30	5.71	.452	1st Prize
371	1.017	4.25	5.67	.385	2nd Prize
375	1.017	4.25	5.74	.509	3rd Prize

CLASS 514.—*One Dozen Dry Cider, made in 1912.*

387	1.015	4.80	5.42	.415	1st Prize
379	1.013	4.80	4.46	.653	2nd Prize
392	1.015	5.60	5.36	.620	3rd Prize

CLASS 515.—*One Dozen Sweet Cider, made in 1912.*

399	1.029	2.70	7.99	.593	1st Prize
415	1.031	1.95	8.78	.515	2nd Prize
424	1.028	3.00	8.39	.415	3rd Prize

CLASS 516.—*One Dozen Cider, made previous to 1912.*

438	1.026	2.85	7.66	.475	1st Prize
446	1.016	5.10	6.07	.412	2nd Prize
442	1.024	4.60	7.65	.361	3rd Prize

CLASS 517.—*One Dozen Dry Perry.*

[No Award.]

CLASS 518.—*One Dozen Sweet Perry.*

460	1.036	1.30	9.48	.489	1st Prize
459	1.034	1.45	9.13	.489	2nd Prize
453	1.041	2.20	11.46	.388	3rd Prize

Wool.—There was nothing of a special character to report on the wool exhibited at Bristol. There were many high-class samples shown in most of the classes, and also some which were barely of average merit. In Class 522 all the samples were short wools, and those in Class 525 were of the long wool type. These were errors of description. In Class 525 two entries were disqualified as not having been washed in the ordinary way. Probably hot water and soap may have been used in this process. In Class 527 three exhibits were also disqualified for the same reason.

Hives, Honey, &c.—The Judges of the bee department congratulate the Royal Agricultural Society on the display of hives, honey and appliances staged at the Show held in Bristol. The competition in Class 528 was very keen, all the collections being good, and in making the awards the Judges took into consideration the workmanship of the hives, and the general utility of the articles shown. In Class 529 the Judges would specially mention No. 547, a hive for general use, combining useful devices for queen rearing and controlling swarming. Among honey extractors, No. 558 deserves mention for its excellent workmanship. The honey classes were well filled, the honey generally good, and compared favourably with that exhibited at previous shows. The display in Class 548 was well got up and most attractive. In Class 551 there were two exhibits of a scientific nature which deserve special mention as being of interest from an educational point, the first prize being awarded to No. 684 for a series of wonderfully fine photographs in natural colours of flowers visited by bees, of the bees themselves as well as their combs. The second prize went to No. 685 for a complete series showing the metamorphosis of the bee from the egg to the perfect insect, as well as examples of comb both old and new.

Horse-shoeing Competitions.—The work done by the competitors in the hunter's class was very varied. The prize winners in this class stood far above the others. The competition in the roadsters' class was very keen and the work done was excellent all round. In the cart horse class the work was also very good. In this class several of the competitors who had done good work lost marks by exceeding the time limit.

Butter-making Competitions.—These competitions were most successful. The actual number of competitors who made butter totalled 147 and the prize money amounted to 94*l*. The class for County Competitors was dealt with in six sections and extended over the first three days of the Show, and—except on the first day, which was very hot and unfavourable for making butter—the work of the competitors was excellent and well

over the usual standard. There was a healthy rivalry amongst the competitors from the nine counties comprised in the competitions, and it was pleasing to find that the prizes were pretty equally distributed over the whole area—which indicates that all the counties are well served by their migratory dairy schools. The Championship Class on Saturday was a very large one, with forty-seven competitors for a single prize of 10*l*. This class was divided into three sections and all individuals did extremely well. There was little to choose amongst the twelve gaining the highest number of marks.

Horticulture.—The exhibits in this section, which were housed in three large tents, fully maintained the standard of merit attained at previous Shows of the Society, and, on the whole, an excellent and attractive display was provided. It was unfortunate that the Holland House Show was held on the same dates, thus preventing some of the Metropolitan trade growers from exhibiting at Bristol, but ample material was, nevertheless, available in the various classes. Of outstanding merit in the non-competitive section were the collections of orchids and hippeastrums shown by Lieut.-Col. Sir George Holford, K.C.V.O., for which he was awarded two of the Society's Large Gold Medals and also a Gold and Silver Gilt Medal given by the Royal Horticultural Society. The latter Society sent a deputation to visit the Show consisting of the President, Lord Grenfell, Baron Schroder, Sir Harry Veitch, Mr. W. P. May and the Secretary, the Rev. W. Wilks.

There were many contributory causes to the success of the Bristol Show, and of these the hearty co-operation of the county and city of Bristol took a foremost position. The Lord Mayor (Mr. Alderman Lowe) displayed the most generous hospitality and was indefatigable in attending the meetings of the Local Committee and the several functions connected with the Society's visit. In all his work the Lord Mayor was ably supported by Sir Frank Wills, Mr. Alderman Hayes, and the other members of the Corporation. The Bristol Local Committee, under the Presidency of His Grace the Duke of Beaufort, are to be congratulated on the results of their labours in connection with the arrangements for the Show, in which they were greatly assisted by Mr. Edmund J. Taylor (Town Clerk), Mr. Peter Addie (City Valuer) and by the Honorary Local Secretary, Mr. George Nichols, the latter gentleman occupying the position filled by his father, the late Mr. George Nichols, at the Bristol Show of 1878.

Amongst the numerous other bodies to whom the Society are indebted for their cordial reception are the Overseas Committee, whose labours greatly enhanced the popularity and value of the Overseas Section in the Showyard; the Merchant

Venturers; the Commoners, who were most kind in connection with the occupation of the Showyard site on the Downs, and the Gloucestershire Agricultural Society, who, as on the occasion of the Gloucester Show in 1909, gave up their show for the year 1913, and joined forces with the Society in one of the most successful shows that the Society has ever held.

THOS. MCROW.

16 Bedford Square,
London, W C.

REPORT ON THE TRIALS OF MILKING MACHINES, 1913.

REPORT OF THE STEWARDS.

Stewards. { ERNEST MATHEWS, Little Shardeloes, Amersham, Bucks.
The Hon. JOHN E. CROSS, High Legh, Knutsford.
CHRISTOPHER MIDDLETON, Vane Terrace, Darlington.
WILLIAM BURKITT, Grange Hill, Bishop Auckland.

THE Trials of Milking Machines for the gold and silver medals and money prizes offered by the Royal Agricultural Society were held at Grange Hill Farm, Bishop Auckland, where, through the kind offices of Mr. Christopher Middleton, the cows and premises, with the motive power, piping, and necessary labour were most generously placed at the disposal of the Society by Messrs. Bolckow, Vaughan & Co., Ltd., the owners of the farm.

The Regulations issued by the Society, under which the trials were carried out, were as follows :

1. The trials will be held at Grange Hill, Bishop Auckland, Co. Durham, commencing on April 22, 1913.

2. Notice of the place and date of the trials will be posted to every competitor as soon as they are fixed. All machines entered for competition must be delivered at the place of trial by the date fixed in the notice.

3. Every competitor must himself provide for the delivery of his implement to the place of trial, and for its removal immediately after the conclusion of the trial.

4. Motive power and piping will be available, but competitors must provide any special attachment they may require.

5. Only one machine of same make will be allowed to compete.

6. All machines competing must be exhibited in the Showyard at Bristol.

7. Every machine entered must be capable of milking at least two cows at a time, and the number of cows to be milked will be left to the discretion of the Judges.

8. Division of milk receptacles must be so arranged that records of each cow milked can be taken.

9. As far as possible the cowman in charge of the cattle will be available for fixing the machines, under the directions of the competitors, so that the cattle may be as little affected as possible.

10. The following are some of the points to which the special attention of the Judges will be called :

- (a) Time taken in milking.
- (b) Weight of milk exclusive of strippings.
- (c) Convenience in attachment to the cows taking into account ease of replacing where machine has become detached from any cause.
- (d) Security of attachment to teats.
- (e) Gentleness in operation.
- (f) Ease in regulating speed of machine.
- (g) Condition of milk.
- (h) Ease and thoroughness of cleansing.
- (i) Lightness of milk receptacles.
- (j) Minimum of supervision during milking, so that man in charge can leave cows, to carry milk to the dairy. &c.
- (k) Price of machine with cheapness of renewal and durability of working parts. (See Regulation 8)

In response to the Society's invitation seventeen machines were entered, of which thirteen arrived at the place of trial. One machine was subsequently withdrawn, and another arrived late on the evening of Tuesday, April 22, and was debarred from competition, but the exhibitor was allowed to give a demonstration of the working of this machine.

List of the thirteen competitors whose machines arrived at Grange Hill :

J. Bartram & Son, Proprietary, Ltd., 688 Bourke Street, Melbourne.
Davies and Ransome, Caxton House, Westminster, S.W.
Davies and Ransome, Caxton House, Westminster, S.W.
Gane Milking Machine Co., Ltd., Auckland, New Zealand.
Klim Milking Machine Co., 20 High Holborn, London, W.C.
Lawrence-Kennedy, Ltd., 22 Maxwell Road, Glasgow.
Manus Milking Machine Co., Norrköping, Sweden.
Max Milking Machine Co., Kølmerhus 12, Copenhagen.
Jens Nielsen, 28 Mariendalsvej, Copenhagen.
Nyeboe & Nissen, 37 Raadhuspladsen, Copenhagen.
Mjolkkningsmaskin Omega, Flen, Sweden.
Vaccar, Ltd., 7 Denman Street, London, S.E.
J. & R. Wallace, The Foundry, Castle Douglas.

This large number of entries necessitated the issue of the following special rules and regulations :

1. The official trials will commence on Tuesday, April 22, but preliminary trials of the machines on the particular group of cows allotted to each machine may be started on Friday morning, April 18.

2. Competitors will be allowed to commence fixing the machinery, &c. necessary for their machines on Monday, April 14. Anyone wishing to start before that day must communicate with the Secretary of the Royal Agricultural Society, 16 Bedford Square, London, W.C., not later than April 7.

3. A group of four cows will be allotted to each machine, the lots being drawn by the Society.

4. The groups of cows will be chosen to give as nearly as possible the same weight of milk. The group letter will be attached to each animal.

5. The owner of the cows will see that they are thoroughly clean before the trials commence and during the trials. Damp cloths may be used before each milking to clean the teats and udders.

6. Both in the preliminary and official trials, the milk will be weighed by the Stewards after the milking machine has completed its task and before the cows are stripped. The cows in all cases will be stripped by the cowman employed on the farm, and not by the competitors, and the weight of the strippings will also be taken by the Stewards.

7. The Bacteriologists will take samples at each milking.

8. Only the owner of the machine or his agent and the operator will be allowed to be present during the trial of any machine, and no person other than the Judges, Stewards, and other representatives of the Society will be allowed in the sheds during the trial. Competitors will not be allowed to be present during the trial of machines other than their own.

9. The Stewards have the power to disqualify any machine which does not comply with the conditions governing the trials, and to order the removal of any person who does not conform to the regulations of the Society or to the directions of the Stewards.

10. In cleaning the machines, cold water, hot water, and steam will only be allowed. The use of antiseptics is prohibited. The cleaning of each machine must be done in the presence of the Stewards or Judges. After cleaning, the machines will be stored in a locked up room.

11. Any machine using a teat syphon or any fitting necessitating the insertion of a tube or any other contrivance into the teats of the cows will not be allowed to be tried, and will be disqualified from the competition.

12. Repairs and renewals to machines after the commencement of the trials on Friday, April 18, must be carried out in the presence of the Judges or Stewards, who will take note of any such repairs or renewals.

13. The Judges have full power to try the machines on various groups of cows, and generally to do anything necessary to ensure the thorough testing of any particular machine.

In accordance with Regulations 3 and 4, the cows were most judiciously and fairly divided into groups by Mr. Burkitt, the manager of Messrs. Bolckow, Vaughan & Company's farms. In one or two cases only had cows to be changed owing to their being nervous and irritable, caused no doubt by the presence of strangers in the byres.

The cattle were excellent specimens of dairy Shorthorns, with good udders, and were considered both by the Judges, officials and competitors as eminently suitable for the trials—indeed the opinion was generally expressed that it would be hard to find a lot of animals better qualified for the purpose.

The preliminary trials commenced on Friday, April 18, at 5.30 a.m., and were continued daily until Monday evening, the 21st instant, when, thanks to the hearty co-operation of the exhibitors and their attendants, everything was going as smoothly as possible.

The various milks and strippings were weighed at each milking, samples being taken for analytical and bacteriological purposes, while the time taken in milking each cow was also carefully recorded. These operations were continued throughout the trials.

The official trials commenced on Tuesday, April 22, the times for milking being 5.30 a.m. and 1.30 p.m., and the daily conditions exactly similar to those in force during the preliminary trials, except that in the last two stages eight and twelve cows respectively were milked at one test by each machine.

The following are the reports of the Judges and the experts from Reading University College :—

Judges { RAYNTUN HIPPISELEY, Ston Easton Park, Bath.
JAMES SADLER, Crewe Gates, Crewe.

Bacteriologists { JOHN GOLDING, F.I.C., F.C.S., Research Chemist in
Dairying, University College, Reading
R STENHOUSE WILLIAMS, M.B., C.M., B.Sc., D.Ph.,
Research Bacteriologist, University College, Reading.
JAMES MACKINTOSH, N.D.A. (Hons), N.D.D., Lecturer in
Dairy Farming, University College, Reading.

The vacuum pump which was used at the trials was kindly provided by Messrs. Lacy Hulbert & Co., Westminster.

To Messrs. Bolckow, Vaughan & Company the Society is greatly indebted for allowing the trials to be carried out on their farm, and especially for permitting their cows to be used for the various types of milking machine without any restrictions, which, considering that the machines came not only from this country but also from the colonies and abroad, was most generous.

The Stewards also wish to put on record their thanks to Mr. Burkitt, the manager of Messrs. Bolckow, Vaughan & Company's farms, who undertook and carried out successfully the difficult task of dividing the cows into groups yielding similar quantities of milk, arranged the fitting up of the sheds to suit the various types of machinery, and generally did everything that was necessary for the proper carrying out of these important trials.

They also desire to express their most cordial thanks to Mrs. Burkitt for the very kind and hospitable way in which she entertained them and all the other officials connected with the trials.

Owing to the limited space in 'cow-byres' generally, and the disquieting effect on the cows of the presence of strangers, it is a matter of regret that neither the public nor the Press could be invited to be present to inspect or report upon such important trials.

REPORT OF THE JUDGES.

The Trials of Milking Machines were held at Grange Hill Farm, Bishop Auckland, in the County of Durham.

Eleven machines were present and ready for trial on the first day on which the judges attended. These were as follows:—

- A. Mjolkningsmaskin Omega, Flen, Sweden.
- D. J. Bartram & Son, Melbourne, Australia.
- E. Vaccar, Ltd., 7 Denman Street, London, E.C.
- F. Lawrence-Kennedy, Ltd., Glasgow.
- G. The Max Milking Machine Co., Copenhagen.
- H. Davies & Ransome, Caxton House, Westminster, S.W.
- K. J. & R. Wallace, Castle Douglas, N.B.
- N. Gane Milking Machine Co., Auckland, New Zealand.
- O. Nyeboe & Nissen, Copenhagen.
- P. Jens Nielsen, Copenhagen.
- Q. Manus Milking Machine Co., Norrköping, Sweden.

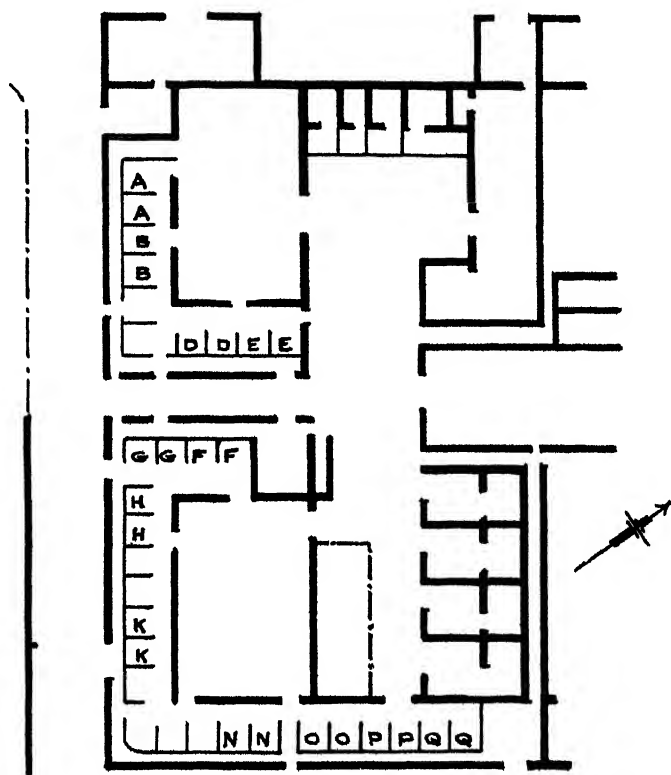
A small machine called "The Klim," worked by foot power, which was not present when the trials commenced, was seen in operation by the Judges, but this machine was, unfortunately, too late to participate in the bacteriological tests, even if it had not failed in other respects.

We may mention that appliances of the "Teat Syphon" type were not allowed to compete, as they were rightly considered by the Society to be injurious to the cows.

At the commencement of this report it would be well to state that the whole plant is included in the term "Milking Machine," and also that the cows on which the competing machines were tried, had been accustomed to being milked by machines for two years.

It seems that milking machines practically work on two fundamental principles, namely, vacuum plus mechanical pressure, or mechanical pressure alone. The first of these principles seems to be that most generally adopted, the inventors having taken advantage of the vacuum controlled by a pulsator to obtain the mechanical motion by which the cow's teat is pressed by the rubber teat cup at the same time that the vacuum is present to draw the milk from the teat to the receptacle. In this manner the machines imitate the sucking action of a calf, which latter must be admitted to be the best means of extracting milk from the cow.

The majority of makers using the rubber lining to the teat cup, have adopted the very ingenious plan of cutting facets in a thick wall rubber tube; these facets are flat and are cut deeper at the portion of the tube which embraces the upper portion of the teat, so that the squeezing action commences at the top and gradually extends to the lower portion of the teat, thus ensuring that the milk contained in the teat shall be extracted by a gentle intermittent pressure as well as by the



— PLAN —
 OF PART OF
 — GRANGE HILL FARM BUILDINGS —
 Scale — 1 inch = 50 FEET.

force exerted by the vacuum. This seems to be a natural process very nearly imitating the action of the calf's tongue and is undoubtedly of great benefit in keeping the teat in good condition and preventing numbness.

The second of the two fundamental principles where external mechanical pressure alone is used, was found in three exhibits. This principle is more nearly akin to hand milking, and there was much ingenuity displayed in arriving at the necessary motions. In considering this type of machine from a bacteriological point of view it is at once apparent that without the very greatest difficulty there can be no provision made to prevent exposure of the milk to the air or contamination from many sources. Reference to the bacteriological results of these trials will quite uphold this statement.

Turning to the points to which the special attention of the Judges was called, as given on page 1, we will take a few of them and explain the construction which the Judges put upon them. Sub-sections (*a*), (*b*), (*j*), and perhaps (*c*), may all be summed up into what we shall call "byre time." In mentioning the term "speed of the whole proceeding" in milking a herd of cows, one must not forget that most of the best types of machines will strip fairly clean when left long enough to do so; but that it is not an economy of time to do this. In practice it is found better and quicker to let the machine do the heavy work and to strip by hand. Say for instance that the machines can milk six cows at one time and that the machines have finished milking the first batch and are now started on the second, the one or more attendants will now proceed to hand strip the first batch, which they will certainly have completed by the time the machines are ready to be moved on to the third batch of cows. Another advantage in this method is that the massage incidental to hand milking is highly beneficial to the udder and teats.

Sub-section (*d*). Security of attachment to teats is most important, and some of the machines were weak on this point. It can readily be understood that the chance of contamination is very great where the teat cup or cups drop into the bedding in the byre with the vacuum still on from the main and the receptacle ready to catch all that the cups inhale.

Sub-section (*e*). Gentleness in operation. Most of the machines had no difficulty in attaining this, and it has since been reported to us that the cows suffered no injurious effects from the trials.

Sub-section (*f*). All the machines had simple means of regulating the speed of the pulsator.

Sub-section (*g*). This point is dealt with fully in the bacteriological report.

Sub-section (h). Ease and thoroughness of cleaning This is most important as upon it largely depends the purity of the milk. During the trials it was specially stipulated that only cold water, hot water, and steam should be used in cleaning any part of the machine to which the milk had access. This was at the request of the bacteriologists. Doubtless the use of strong antiseptics would have been most prejudicial to their work.

Arising from this sub-section, the question of rubber tubes conveying milk should be considered. As far as possible this practice should be condemned, for several reasons, the most important of which is the fact that it is practically impossible to prevent the presence of bacteria on a surface such as rubber presents. In other words, it is most difficult to clean thoroughly. Another point against the use of rubber tubes is the fact that they are very apt to perish and crack where they are continually being bent over as is done in the case of placing the cups on the teats in most machines using a vacuum.

Sub-section (k). This will be dealt with in the description of each individual machine.

In giving a short description of each machine we propose to first take the one which the Judges selected as being the best machine which was presented for trial.

Mjolkningsmaskin Omega. First prize of 25*l.* and gold medal.—It will be noticed on referring to the illustration of that part of the Omega machine which is essentially "cow borne," that it consists of four main parts: the teat cups, the conduits, the pulsator, and the receptacle. It will also be seen that these four parts are combined in one unit which is attached to the cow by means of web straps, so that the weight of the unit is supported entirely by the cow, but unlike the majority of machines the milk ducts are made of celluloid, are transparent, and very tough, the inner surface very nearly approaches the smoothness of glass, and so are quite easily cleaned.

Before leaving the subject of these tubes it may be of interest to know that having misgivings concerning their strength under the different ordeals to which they were liable to be put during the process of cleaning, as well as in use in the byre, the exhibitor was asked if he would allow us to test one of them to destruction short of burning it. This was readily agreed to, so we first of all tried the bending test cold; with considerable force we were able to partially buckle the tube. This was easily repaired by placing the tube in boiling water when it became sufficiently soft to restore it to its original form by a gentle pressure of the thumb and fingers. We then subjected the tube to the heat of steam at 60 lb. per square inch, which amounts to 292.7° F. It became soft but kept its

tube form well, and when allowed to cool on a flat table was quite straight and fit for service in a few minutes.

We next tried a crushing strain on the cold tube by stepping on it in nailed boots; this had practically no ill effects on it.

The teat cups are entirely supported on the celluloid duct tubes which are led into the milk receptacle through rubber ring washers, the latter are air tight but allow of practically a universal motion of the cups including a telescopic motion thus allowing the cups room for adjustment to fit any cow. The tubes being transparent the attendant can at once see that all four quarters are milking properly, and by means of a tap, which is fitted to each tube where it leaves the cup, he can cease to operate any cup he may choose.

Should the cups become detached from any cause, the resilience of the rubber washers and the slight spring of the tubes just allow the cups to drop clear of the teats and no more. The receptacle contains an ingenious device which, by means of a floating ball valve so arranged that it closes the mouth of the vacuum pipe when the receptacle is full, allows the cups to fall to the above limit automatically. This was exemplified on one occasion when the yield of milk from one cow exceeded the capacity of the receptacle. It should be mentioned that the machines exhibited were made for use in Sweden, where we understand cows are milked three times a day.

We understand from the representative of the Omega Company that they intend to fit a tap in the metal vacuum pipe just where it enters the lid of the receptacle, by means of which, after closing the taps on the teat cups, the vacuum will be preserved over the milk while the unit is being removed from the byre, thus ensuring that the milk has never come into contact with the outer air at any time.

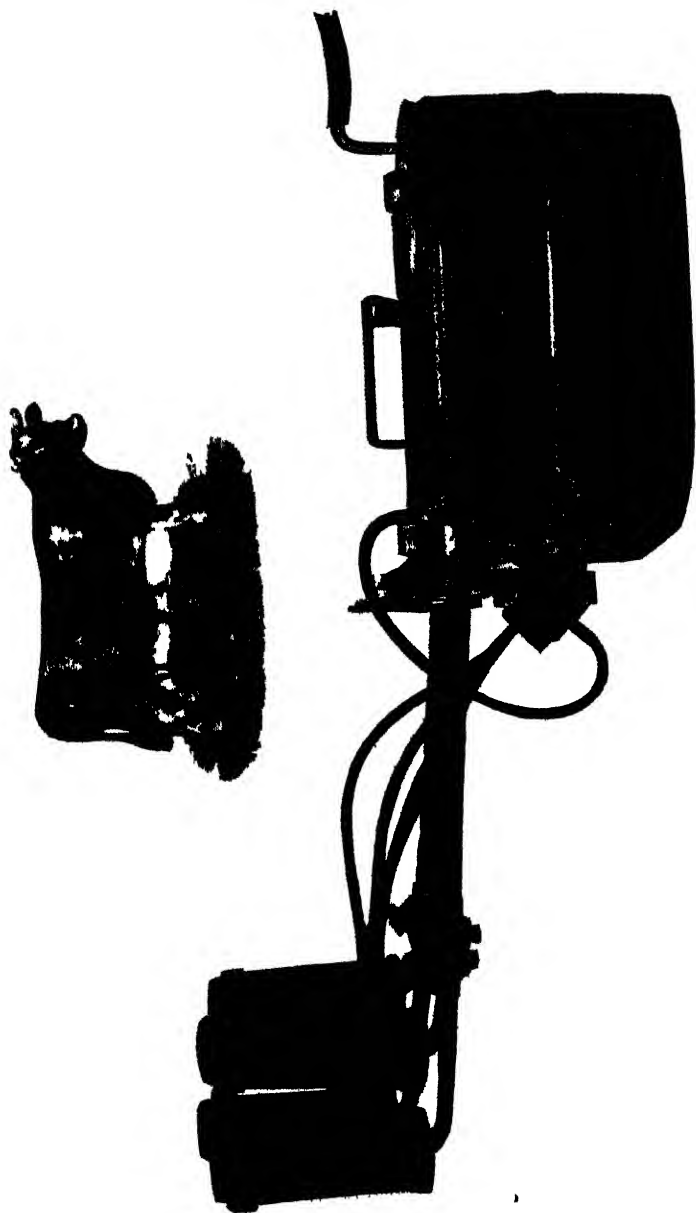
This will be of the utmost importance where careful scientific milk tests are being carried out.

The Omega machine was tried on the most nervous and restive cow that could be obtained, a cow which was restive even when hand milked by its own attendant. The cow tried without success to dislodge the machine, and finally settled down quietly.

The pulsator in this machine is of the duplex horizontal type, and is carried on the after end of the receptacle. The speed is easily regulated.

The power required to work four of these machines is about 1 H.P., with a vacuum of 14 to 15 inches of water. The price of four machines which are sufficient to milk a herd of fifty cows is 80%.

Included in this price are four groups of teat cups with their receptacles and pulsators, one vacuum pump, one air reservoir



The "Omega" Milking Machine

with vacuum gauge and relief valve, fifty branch cocks, and complete length of piping.

The following gives a comparison between the Omega and one of the competing machines.

Both machines were set to milk the same four cows on different days, the Omega on April 25 and the other machine on April 21. The morning milking only being taken in each case.

	Averaged	Lb	oz	6 Milk	per cow
OMEGA {	"	19	1	4 Strippings	" "
	"		6½	minutes' time	" "
	"	16	9	Milk	" "
ANOTHER MACHINE {	"	1	6	Strippings	" "
	"	10½		minutes' time	" "
	"				" "

NOTE—The time taken includes fixing and adjusting the milking machine unit.

Vaccar, Ltd. Second prize of 10*l.* and silver medal.—This machine is so well known that it does not require the somewhat detailed description which we have given to the Omega. The system is the usual one adopted by this firm, and consists of rubber-lined teat cups connected to the receptacle, which stands on the ground, by a length of rubber tube through which the milk is drawn. These tubes are usually cut and a piece of glass tube is inserted to enable the attendant to note the flow of milk. The intermittent action of the vacuum is attained by means of a double cylinder horizontal duplex pulsator which is fixed to the top of the receptacle, this being connected to the vacuum main by a short length of armoured rubber hose.

On April 25 this machine was put to work on a batch of cows which had previously been milked by another competitor. For sake of comparison, we will take the case of one cow of the batch which was known to be a difficult milker. The performance of the Vaccar was as follows:—On the 25th the Vaccar extracted 18 lb. 4 oz. of milk, leaving 3 lb. of strippings, and accomplished this in 11 minutes. The other machine extracted 18 lb. of milk, leaving 5 lb. 4 oz. of strippings in 13 minutes; showing a distinct advantage for the Vaccar on all three items.

The price of the Vaccar machine for milking fifty cows, which includes two machines each with a double set of cups capable of milking four cows at one time, is 116*l.* 1*s.* This price includes erecting and everything necessary to the milking plant except the prime mover.

We will now proceed to mention the other machines which were tried by the Judges, and to describe any salient feature without comment, taking them in the same order as the previous list.

Davies & Ransome. Two machines were originally entered for competition, but one of them was withdrawn in the preliminary run. The competing machine was generally

similar to other vacuum and pulsator machines. The horizontal pulsator was mounted on the lid of the receptacle, the inlet air being filtered through cotton wool. The apparatus was arranged for the simultaneous milking of two cows. The indiarubber air and vacuum pipes in this machine were made of different sizes, so as to avoid the possibility of error in coupling them up. The receptacle was divided by a partition so as to keep the milk from each cow separate, the pouring arrangement which consisted of a gun-metal screw and cap did not, however, commend itself. The price of the complete double set of apparatus as exhibited, consisting of the divided receptacle, pulsator, air and vacuum tubes, and two sets of teat cups, was given as 19l.

Manus. This machine depends entirely on mechanical pressure applied to the teat; the milk gravitates to the receptacle, and is exposed to the air twice during transit. From this it follows that the receptacle itself is open to the air.

Power is transferred from the main shafting to the machine by a flexible shaft; the latter by means of cams actuates reciprocating plungers working in guides. The plungers carry cross-heads having rubber pads on them, and their motion is such that the upper portion of the teat is pressed first, after the manner of hand milking.

The average weight of milk per cow for morning and evening worked out at 31 lb. 11 oz., strippings 3 lb., and time 11½ mins.

Jens Nielsen. Here the inventor relies on mechanical pressure only. The cam actuating the teat squeezer being in this case on the main shaft the flexible shaft has a reciprocating motion, after the manner of the Boden wire. There are two of these wires delivering power to the rubber rings which fit on to the tests. Each wire is actuated by a separate cam so set that the rubber ring closes on the upper portion of the teat first and squeezes the milk from it into an open pail, which is slung on the cow.

Nyebøe and Nissen. In this machine the principle of squeezing the teats is adhered to and is obtained by water power, the latter being set in motion by a reciprocating pump driven from the main shafting. By means of valves the pressure is first brought to bear on the rubber ring fixed to the upper portion of the teat, which, by this means, is filled with milk; the adjustable spring-loaded valve then opens and admits the pressure to the lower rubber ring, squeezing the milk from the teat into the receptacle, to which the outer air has access. In the final phase of operations the pressure is relieved from both rings.

Gana. This machine made use of vacuum and pulsator, the latter being independent. The teat cups were rubber lined,

and were thinner at the top. The machine was used in conjunction with a releaser plant, which necessitated the milk being conveyed through long metallic pipes. These were cleaned by placing a tight fitting brush, of the bottle-brush type, into the pipe and drawing it through by means of the vacuum.

J. & R. Wallace. This machine differed somewhat from the majority of machines depending on vacuum and pulsator in that each teat cup carried its own pulsator. The cups and liners were rather longer than is usual, and with the pulsators weighed 9 lb. per set. The rubber liners were formed in the usual manner with flats thinned towards the upper end. This machine was a particularly clean stripper.

Max. This is a vacuum and pulsator machine varying only in details from the usual type, the chief difference being found in the construction of the pulsator. Rubber tubes are used to convey the milk to the receptacle. The teat cups are lined with rubber tube, which is slightly stretched. It is claimed that by this means it is possible to make one cup to fit any size of teat.

Lawrence-Kennedy. This machine was very similar to the Vaccar, and worked on the same principle. One slight difference was shown in the method by which the "calf tongue" action was achieved. The teat cups were slotted on one side, and a rubber pad was fitted into the slot. The vacuum actuated this pad in such a manner that it caused an intermittent pressure on the teat. We were informed, at time of the trials, that this machine had not yet been put on the market.

J. Bartram & Co. We understand that this firm is under the same agency as the Vaccar and the Lawrence-Kennedy, and the system is similar. The pulsator is similar to that of the Lawrence-Kennedy, except that it contains only one differential plunger and has a horizontal piston valve made of vulcanite. The teat cups are precisely the same as those used in the Vaccar.

During the trials the majority of the competing machines, which were worked on the vacuum principle, used the vacuum supplied from the plant existing at the farm, the average vacuum being from 15 to 16 in. of water. This plant worked admirably, and was a great boon to those competitors. The Tables showing the weight of milk drawn from each batch of cows was ample evidence of the great care and judgment that had been bestowed by Mr. Burkitt in this department. The result of these trials, coupled with the fact that machine milking has been in successful practice for a long period at Grange Hill Farm, leaves no doubt that the milking machine is now a practical implement, which, without being injurious to the cows, will save time and labour, in addition to ensuring greater purity

of milk. We wish to record our admiration and thanks to all the officials connected with the trials for the excellent organisation which we found on our arrival at Grange Hill, with special thanks to the Society's Stewards, Mr. Ernest Mathews and the Hon. John E. Cross. Also to the Local Steward, Mr. Burkitt, who, with Mrs. Burkitt, showed us every kindness and hospitality.

Our thanks are also due to the Society's Engineer, Mr. F. S. Courtney, for his invaluable assistance with mechanical details.

In concluding this report we must refer to the excellent staff of experts from the Reading University College who so ably undertook the bacteriological tests, and in mentioning this department I wish to lay great stress on the importance and completeness of their extremely arduous work. The Judges were very largely guided to their decisions by the results obtained by these gentlemen, and their report must be taken into consideration when reading this one.

BAYNTUN HIPPISELY.

JAS. SADLER.

BACTERIOLOGICAL AND CHEMICAL REPORT UPON THE SAMPLES OF MILK OBTAINED AT THE MILKING MACHINE TRIALS, BISHOP AUCKLAND, APRIL, 1913.

In considering this report it is to be remembered that the object of the trials was to discover which of the competing machines was the best from all points of view. The performance of the machine in the milking of the cows and the principles of construction are of first importance.

The bacteriological counts and the keeping quality of the samples obtained are subject to the influence of many factors; such as the skill and attention of the operator in the daily cleaning of the milking vessels and their connections. The influence of these factors is great and therefore in awarding marks the general construction was considered from a bacteriological point of view as well as the actual figures obtained at the examination. Taking all the varying factors into consideration we entirely agree with the decision of the judges.

The milking machine trials began on the morning of April 18 and were continued twice daily until the morning of the 25th, on which occasion only two machines were left in and no samples of milk for bacteriological examination were taken. On all other occasions samples were taken from each cow as the milking proceeded, but those obtained on April 18 are excluded because the cows had not at that time got used to the machines.

This report therefore deals with the samples taken from the 19th morning till the evening of the 23rd, when all the machines were at work except that machine N did not begin until the evening of the 19th. In order to make a comparison between machine drawn milk taken under the most favourable circumstances, such as existed at the trials; hand drawn milk, and milk taken by a machine which was in constant use, three further sets of samples were taken.

A.—On the afternoon of the 17th, when 48 cows were milked by hand and samples taken. These cows were, with few exceptions, those which were afterwards used in the trials, they had been groomed for several days in preparation for the trials and before they were milked their udders were washed; the cans into which the milk was received had been steamed. The cows were divided into groups of four and the examination carried out on lines exactly similar to those observed during the trials. The conditions were clearly better than those found on an ordinary farm.

B. & C.—Samples which were taken in the evening of the 27th and the morning of the 28th. These were taken from 12 cows in three sets of four, under the normal conditions existing at the farm. The machines used were those which had been in use for a considerable period. They had been steam sterilised on the 24th, and subsequently the tubes were washed each time after milking. The cans were steamed. This was in accordance with the custom at the farm to steam sterilise the tubes once a week. During the period of the actual trials every opportunity was given to the competitors to wash and steam their tubes and cans twice daily. No other means of cleansing was allowed. After cleansing, the machines were locked up in a clean stone floored, white washed chamber ready for use next time. It is true some of the competitors did not make the best use of their opportunities but the conditions prevailing were undoubtedly better than are likely to be found on an average dairy farm. It may therefore be of interest to compare the bacteriological contents of the milks obtained with those found when the cows were milked by hand and those found when the cows were milked by an old machine under average ordinary conditions. In all cases the samples of milk were taken and examined on a similar plan. That is to say, as soon as each cow was milked a sample was obtained in a sterile glass stoppered bottle which was kept cool in ice. Proportional parts from each cow's milking (there were four cows to each machine) were mixed together in a sterile flask, dilutions with normal saline were made and plates containing 10 whey gelatine were inoculated and incubated. A fresh sterile pipette was used for each stage of the procedure and the plates were completed

within three hours of the milking. The plates were counted until no fresh colonies appeared, or until liquefaction took place. In no case were they counted fewer than three times.

It should be remembered that the samples from the hand milked cows were only taken on one occasion and that in the afternoon. They should therefore be compared with afternoon machine milkings and the figures obtained should not be too literally accepted. The milks, however, are sufficiently interesting to be included in the report.

Hand milked, one occasion, 12 groups of 4 cows each	Machine Trials Average of 5 days after- noon specimens
No of organisms per c.c.	No of organisms per c.c.
2,000	
1,000	410
1,500	718
1,500	782
1,000	1,044
4,000	1,408
1,500	2,266
2,000	3,338
1,000	3,706
6,500	4,242
4,000	7,188
6,000	48,938
Total 32,000	Total 73,990
Average 2,666	Average 6,727

It is seen that six of the machines averaged less than the hand drawn milk and five of them averaged higher than the hand drawn milk.

There is no doubt that the average of the machine drawn milk is greatly increased by the presence of one machine which was bacteriologically consistently bad throughout the trials and finally gave an average of 48,938 organisms per 1 c.c. It is doubtful whether it is fair to exclude this machine, but even if it be done, the general average still stands at 2,500 organisms per 1 c.c., which is very little better than the hand drawn, or if the worst hand drawn milk be excluded to compensate for the exclusion of the worst machine drawn milk, the averages work out at hand drawn 2,318, machine drawn 2,500, the hand drawn being thus 182 organisms per 1 c.c. better than the machine drawn.

One further point remains for consideration before the keeping qualities of the samples and the report upon the individual machines are considered and that is the fact that except in the case of one machine all the machines gave a better bacteriological content at the afternoon milkings than they did in the mornings.

Trials Average 5 milkings 4 cows each machine		Old Machine 12 cows 3 sets of 4 one milking	
Morning	Evening	Morning	Evening
3,940	2,266	28/4/13	27/4/13
2,440	718		
2,800	1,044		
33,900	48,938		
17,540	7,188		
7,020	732		
12,360	1,408		
8,100	3,338		
940	410	26,800	7,500
5,500	3,706	4,800	10,400
6,080	1,242	3,500	5,100
Total	100,660	35,100	23,000
Average	<u>9,151</u>	<u>11,700</u>	<u>7,666</u>

Various possible explanations of these facts may be offered. The morning milking began at 5.30 a.m., the evening at 1.30 p.m.; there was therefore a difference of 8 hours between the milkings. The byres were cleaned up after milking ceased; they were not so clean in the morning as in the afternoon. The teats and udders were more liable to be contaminated in the morning, these were washed before milking. The longer interval of time associated with the greater tendency to contamination of the teat orifices during the night might tend to an increase in the bacterial content of the foremilk. Throughout the trials this was supposed to be removed before milking: it was not very efficiently done. The machines themselves had had a longer interval of time during which any bacteria still present after cleaning could grow in them. The quantity of milk to be obtained was greater in the morning, this involved more prolonged exposure of the machines to the possibilities of contamination in the byre, increased risk of infection from the falling off of the teat cups, and in some cases necessitated the changing of a can in the middle of the milking of a cow, the quantity of milk being too great for the capacity of the vessel. All types of machines showed this difference in bacteriological content between the morning and evening milkings.

The keeping quality of the samples.—In order to determine the keeping quality of the milks from the different machines, composite samples of the milk of the four cows milked by each competitor taken after every morning's and evening's milking were placed in sterile flasks plugged with cotton wool. These flasks were kept in a warm room, the temperature of which varied from 60° to 72° F. It was not found possible to regulate the temperature of this room exactly; but as the samples from each milking stood side by side and were subject to

the same variations of temperature, the results are strictly comparable.

Small quantities of milk were taken from these flasks at intervals, 10 c.c's of which were titrated with as little delay as possible

Owing to the variations of temperature above mentioned, it is not possible, with any degree of certainty, to attribute a rise in the rate of development of acidity to a progressive contamination of the tubes and milking vessels with milk souring organisms.

From the morning of Saturday, April 19, to the evening of Wednesday, 23rd, a complete series of determinations was obtained from the time when some of the samples commenced to develop acidity to the time when some began to curdle. The average of figures so obtained is given in the following table, and indicates considerable differences in the keeping quality of milk from the different machines.

Average of figures obtained by the titration of samples kept for the same time at the same temperature, each lot being titrated on at least two occasions

Results expressed in gain of lactic acid over original fresh milk per 100 volumes

Samples taken from Saturday morning to Wednesday evening.

Machine	Gain percentage lactic acid	Machine	Gain percentage lactic acid
D.	0.07	Q.	0.23
O.	0.09	A.	0.25
E.	0.13	H.	0.26
N ¹	0.18	P.	0.28
F.	0.21	K.	0.29
G.	0.22		

¹ Average for four days only

The above order was in general maintained when the whole period of the trial was taken into account.

It must be pointed out that all these results are good, more than half of the samples developing not more than 0.1 per cent. lactic acid in three days in spite of the warm room in which they were kept.

The curdling of the milk did not coincide with the development of any particular amount of acidity as measured by the titration, some milks developing more than twice as much acidity as others before they curdled. This is not to be wondered at, considering the varied bacterial flora, nor can any close agreement be looked for between the bacteriological counts and the observed development of acidity. The figures given do, however, indicate the keeping qualities of the milks, which are good.

REPORT ON THE INDIVIDUAL MACHINES.

*Machine A.**Bacteriological Content per 1 c.o.*

	Morning	Evening
19th . .	5,000 . .	1,260
20th . .	7,800 . .	600
21st . .	1,800 . .	310
22nd . .	2,200 . .	5,460
23rd . .	2,900 . .	3,700
Total . .	19,700 . .	11,330
Average . .	3,940 . .	2,266

Average morning and evening combined . .	3,103
Position according to bacteriological content . .	4th

Comments.—A very good machine because (1) No rubber tubing. (2) Short straight celluloid tubes convey the milk from the cups to the can: a complete view of the inside of the tubes can be obtained. (3) The teat cups cannot fall into the litter.

Suggested.—(1) That the lid be kept on the can when the latter is in the cow house. (2) That the internal surface of the can be rendered smooth.

Machines D. and E.

These two may be considered together as their construction is very similar.

	<i>D.</i>		<i>E.</i>	
	Morning	Evening	Morning	Evening
19th . .	700	750	3 200	430
20th . .	6,400	300	2,300	800
21st . .	2,500 .	920	5,500	770
22nd . .	1,500	540	1,800	1,720
23rd . .	1,100	1,100	1,700	1,500
Total . .	12,200	3,590	14,000	5,220
Average . .	2,440	718	2,800	1,044

Average morning and evening combined . .	1579	1922
Position according to bacteriological content	2nd	3rd

During the trials every possible care was taken of these machines, so that bacteriologically the results were good. It must be remembered, however, that when used under ordinary conditions the machines present the following disadvantages: (1) Length of rubber tubing, the inside of which cannot be seen; (2) If the teat cups fall off they suck up dust from the floor.

Machine F.

	Morning	Evening
19th . .	12,200 . .	120,000
20th . .	46,200 . .	9,400
21st . .	101,700 . .	102,600
22nd . .	5,600 . .	4,590
23rd . .	3,800 . .	8,100
Total . .	169,500 . .	244,690
Average . .	33,900 . .	48,938

Average morning and evening combined . . 41,419

Position according to bacteriological content . . 11th

This machine was not a success. The milk from each teat is conveyed in a separate rubber tube to the receiver; each tube has its own tap, and this great length of tubing and associated crevices render efficient cleansing very difficult. The glass sight feeds leaked and admitted air into the milk. If the teat cups fall off they suck up dust from the floor.

Machine G.

	Morning	Evening
19th . .	8,600 . .	15,000
20th . .	29,600 . .	3,400
21st . .	40,400 . .	13,000
22nd . .	800 . .	1,340
23rd . .	8,500 . .	3,200
Total . .	87,900 . .	35,940
Average . .	17,580 . .	7,188

Average morning and evening combined . . 12,384

Position according to bacteriological content . . 10th

The milk passes through a similar amount of rubber tubing to D and E, and therefore presents the same objections with regard to cleansing; likewise when the teat cups fall off they may suck up dirt from the floor. The construction of the can was such that it was difficult to clean, because of its depth, narrowness of the mouth and roughness of the joints.

Machine H.

	Morning	Evening
19th . .	11,800 . .	300
20th . .	4,900 . .	800
21st . .	17,000 . .	680
22nd . .	1,100 . .	890
23rd . .	800 . .	1,000
Total . .	35,100 . .	3,670
Average . .	7,020 . .	732

Average of morning and evening combined . . 3,876

Position according to bacteriological content . . 5th

The milk passes through a similar amount of tubing to D and E. There is also similar trouble with the teat cups.

Machine K.

	Morning	Evening
19th . .	4,900 . .	690
20th . .	50,800 . .	2,100
21st . .	1,600 . .	560
22nd . .	1,900 . .	990
23rd . .	2,600 . .	2,700
Total . .	61,800 . .	7,040
Average . .	12,360	1,408

Average morning and evening combined . . . 6,88½
 Position according to bacteriological content . . . 9th

Comments.—Here the rubber tubing is relatively short. The air from the pulsators passes through the tubes with the milk. The teat cups fell off on many occasions. The can was readily cleansed.

Machine N.

	Morning	Evening
19th . .	— . .	4,010
20th . .	9,600 . .	2,500
21st . .	6,700 . .	1,940
22nd . .	14,900 . .	1,940
23rd . .	1,200 . .	6,300
Total . .	32,400 . .	16,690
Average . .	8,100 . .	3,338

Average morning and evening combined . . . 5,719
 Position according to bacteriological content . . . 8th

Two methods of delivery were adopted: (a) The milk passed first through rubber tubing, then through a long metallic tube into a can which, tipping over, delivered it into another length of metallic tubing and thence to a pail. It was quite clear that all this apparatus would not be kept clean. (b) The milk passed through rubber tubing into receptacles which were long, narrow, easily upset and difficult to clean. In both cases the teat cups could fall off and suck up dust from the floor.

The following machines—O, P, Q—are of quite a different type to any of these previously considered. The milk being obtained by pressure instead of suction.

Machine O.

	Morning	Evening
19th . .	1,400 . .	210
20th . .	1,100 . .	200
21st . .	1,000 . .	410
22nd . .	700 . .	180
23rd . .	500 . .	1,100
Total . .	4,700 . .	2,050
Average . .	940 . .	410

Average morning and evening combined . . . 675
 Position according to bacteriological content . . . 1st

Comments.—Bacteriologically the milk from this machine was notably clean, but owing to grave defects in the working of the machine it could not be seriously considered.

Machine P.

	Morning	Evening
19th . . .	2,500	600
20th . . .	7,000	11,000
21st . . .	2,300	2,320
22nd . . .	4,300	1,010
23rd . . .	11,400	3,600
Total . . .	27,500	18,530
Average . . .	5,500	3,706

Average morning and evening combined . . . 4,603
 Position according to bacteriological content . . . 6th

Comments.—Bacteriologically the milk obtained was of moderate quality. The milk did not pass through any tubes, but was collected in an open pail. Although there was no possibility of contamination from tubes, the manipulation of udder and teats caused the milk to be contaminated by particles of dust, hairs, &c., from the cow.

Machine Q.

	Morning	Evening
19th . . .	4,600	2,680
20th . . .	2,600	2,100
21st . . .	4,200	10,000
22nd . . .	10,700	4,230
23rd . . .	8,300	2,200
Total . . .	30,400	21,210
Average . . .	6,080	4,242

Combined average morning and evening . . . 5,161
 Position according to bacteriological content . . . 7th

Bacteriologically the milk was very similar to P. The milk passed from the teat cup through a very short tube into an open shallow tray, whence it was carried by a metal pipe forward to the receiver; on entering the receiver it passed through a layer of cotton wool between two gauze strainers. The teat cups, gauze strainers and receiver are difficult to clean properly, while the open tray caught hairs, dust, &c., falling from the udder which, though caught by the strainer, were subjected to continued washing by the entering milk.

SUGGESTIONS TO MILKING MACHINE MAKERS.

1. The teat cups should be so supported that even though they be kicked off or slip off the teats they will not fall to the floor and suck up dust, &c. Throughout the trials it was noticed that cups which depended solely upon suction for their support tended to fall off and become foul.

2. The tubes leading from the cups to the can should be short; rubber and joints should be avoided.

3. The can should be made without internal angles, with an opening sufficiently large to render a view of the interior possible, and to make thorough cleansing easy.

JOHN GOLDING.

R. STENHOUSE WILLIAMS.

JAMES MACKINTOSH.

THE TRIALS OF HAND-POWER MACHINES FOR APPLYING DRY INSECTICIDES OR FUNGICIDES IN POWDER FORM TO BUSHES OR TREES.

THE trials before the Judges of Hand-Power Powder Sprayers took place at Long Ashton, Bristol, on May 23, 1913. An orchard on the Cider Institute was lent for the purpose. The Judges were Mr. C. S. Martin, of Dunnington, Alcester, and Mr. J. M. Young, of Wisbech, with Mr. F. S. Courtney, the Society's Consulting Engineer, and the trials were under the charge of the Steward, Mr. E. V. V. Wheeler, of Tenbury.

The Judges started their work about 9.0 a.m., and after exhaustive trials the awards were made as follows:—

1st Prize.—Knapsack Powder Pump, exhibited by Messrs. F. W. Moellenkamp & Co, London.

2nd Prize.—Knapsack Powder Pump, by Messrs. Pilter & Co., London.

Reserve.—Knapsack Powder Pump, by Messrs. H. Hartjen & Co., London, called the "Holder."

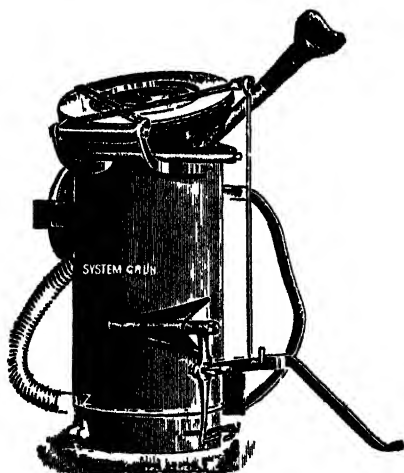
The Knapsack Pump shown by Messrs. Moellenkamp & Co. is of a very useful type. It is very simple in construction; all the parts are very easily disconnected and can be easily replaced.

The bellows are powerful and are held in place by brass bands which will not rust. The valve at the top of the machine is fixed with screws, and can be easily replaced, and the lance and spreader are well made; the latter can be bent

into different shapes to alter the form of the spray, is made of German silver, and guaranteed not to break. The regulation of the feed is good.

A strong point in its favour (and this applies to all knapsack powder pumps) is the portability for work among fruit trees and bushes where there is very little room; this pump will be found of great use.

The price of the Moellenkamp Pump, 23s., is very low and was considered good value. This machine is of the single stroke variety. The makers make a machine exactly the same, but with double acting bellows at a little extra cost. The capacity of the pump shown was 22 lb. of powdered sulphur.



First Prize Knapsack Powder Spray Pump. Exhibited by F. W. Moellenkamp & Co

The pump shown by Messrs. Pilter & Co. is a knapsack of the double acting diaphragm bellows pattern. The bellows are protected with a metal top which can be taken off to renew the bellows if required. The price of this pump is 30s.

The distribution of the powder was very even; lance was light and handy in construction. This pump was specially good for low work, such as powdering low bushes, strawberries, potatoes, &c. The bellows did not appear to be powerful enough to distribute powder against a wind upon high trees; it was felt that the regulation of the quantity of powder discharged was not quite so good as should be; this is a difficulty with all hand-power distributors.

The "Pilter" is easily taken to pieces, and all parts are renewable. The capacity is 28 lb. powder.

Messrs. Hartjen sent the "Holder" Knapsack Powder Sprayer. This is another useful machine and ran very close for second place. The "Holder" is light and easily taken to pieces for repairs or renewal. The price of this pump is 32s. 6d and the capacity 26 lb. The bellows are of single stroke action.

All the knapsack powder pumps are worked by one man.

Messrs. Gratton and Son, Boston, Lincs., showed a pump on wheels worked by two men, a chain feeding the powder to blower. The difficulty with this style of feed is to get the small chain used to carry an even quantity of powder to the blower; the latter is very good and the gear driving wheel easily turned. The price of the pump shown was 6l. 10s.

Messrs. Weeks, Maidstone, sent a very well made machine. It is carefully thought out and strongly built. The price of the hand-power machine is 6l. 6s. Of the large machines this is the best. The great difficulty with all these machines is to get a regular feed to the blower; the agitator used is of a small type and proved quite inefficient. If perfected in this direction it would make a very useful machine. Two men are required to work it; the capacity is 22 lb. powder.

Messrs. F. Randell, Ltd., North Walsham, sent a distributor worked by a plunger pump; it is not very portable, and is open for improvement. The capacity is 20 lb., and the price 6l. It is supposed to be worked by one man, but would require two. It is well and strongly made; the blower very good indeed. This pump, again, is weak in its feed.

The conclusion arrived at by the Judges was that for the particular purpose shown, viz., "for applying dry insecticides in powder form to bushes or trees" the portability and evenness of distribution and ease of dismantling of the knapsack type were great points in their favour. It was felt that the fan system of blowing, as against the bellows, was perhaps the correct system, but until the powder can be fed more evenly to the blowing chamber the "Knapsack" scores. The difficulty with the chain feed is that it does not sufficiently agitate the powder, which banks up in the form of a tunnel over the chain and the feed ceases. A very similar action takes place with a finger agitator. These defects remedied, and a light, easily portable machine at a fairly low cost evolved, steps would be made in the right direction.

JAS. M. YOUNG.
CHARLES S. MARTIN.

MISCELLANEOUS IMPLEMENTS EXHIBITED AT BRISTOL, 1913.

THIS year there were exactly the same number of entries in the New Implement Class as last year, namely forty-seven, but the Judges were only able to award one medal, and allow one implement to be entered again next year under Rule 81 as "being capable of further development."

The medal was awarded to the Perfect Dairy Machines, Ltd., Stand 163, No. 1862, for their *Cream Separator Perfect New Model* No. 12, 44 gallons per hour, with automatic lubricator, price 11/. 10s.

This machine was exhibited in 1912 and the Judges would have tried it then only for the unfortunate fact that on account of the outbreak of foot-and-mouth disease it was impossible to get the milk until it was too late.

Great attention has been given to the lubrication of this machine, there being only one lubricator to attend to.

The vertical bowl, spindle and its bearings, worm wheel and its shaft, are all enclosed in the main casting, which is hollow, and through the top of which the first motion shaft turned by the handle passes. This worm wheel dips into the oil at the bottom of the casting, and throws it up and all over the different bearings; in fact the lubrication is the "Splash Lubrication" familiar to most people in the motor car engine. There is an ingenious clutch on the shaft which is simply a catch worked by gravity, engaging the shaft with the worm wheel when the former is turned, so that directly the rotation of the handle is stopped there continue no external parts running, the bowl and worm wheel alone revolving, and they are enclosed.

On trial the full quantity claimed to be separated was reached, and the analysis as reported by the Society's Analyst was very good.

The implement recommended for entry next year was exhibited on Stand 286, No. 3608, the *Darby-Maskell Motor Plough*.

The Judges considered that as this machine worked on an entirely new principle it should be tried; consequently it was taken to a field a couple of miles away, from which the hay had just been carted. The ground owing to the heat was very dry and hard, and it is doubtful whether horses could have then done anything with it at all. The work done by the machine was very good, it broke up the land thoroughly—the facility of manœuvring being fairly good—the defects being that the work on each side of the machine was not



FIG 1.—Darby Mackell Motor Plough

evenly done, and that the work was done better going up hill than going down; also that to move from one field to another or along the road, it was necessary to take out a driving shaft. These considerations and the cost (850*l.*) decided the Judges to refer it to next year's Show under Rule 81. It is described by the makers as follows:—

“A Motor Ploughing machine supported on three travelling wheels, each of which is geared direct on to the engine, and when travelling forward the machine moves at the rate of half to one mile per hour. The ploughs are 12 in number, attached to a chain which revolves on sprocket wheels in the opposite direction to the progress of the implement. When at work there are six ploughs stirring up the soil and at the same time helping to propel the machine forward without putting the least pressure on the subsoil; it is 16 ft. 6 in. long by 8 ft. 3 in. wide, and turns at each end of the field in a little more than its own length.”

Take the capital letter V and imagine that each arm is an endless chain running over wheels situated in vertical plane, two at the point, and one at each end of the arms. On each chain are mounted six small ploughs; three will be on the top side, and three on the lower side in contact with the ground. The lower side of the chains with the ploughs run towards the point of the V which is supported on a travelling wheel, the outer side being supported by two other steering wheels. It will be seen that as the ploughs cut into the ground the tendency is to force the whole V forward, so the propulsion does not depend on the traction of the wheels but on the working of the ploughs, and the adhesion of the wheels prevents the machine moving too fast. It could not be called a “general purpose” implement, which a farmer requires. Further developments and simplifications no doubt will be effected by next year.

Taking the other exhibits in order of catalogue as they seem to require mention.

The Milk Supply Plant, Stand 38, No. 211, manufactured by John Struthers, and exhibited by J. & R. Wallace, Castle Douglas. A vast amount of ingenuity seems to be expended on the sealing and sterilizing of the distributing vessels shown. It is doubtful whether all this elaborate system could be carried out in practice.

Stand 46, No. 313, Richard Sizer, Ltd., 82, Mark Lane, London. *Cubing machine for making cattle-feeding cake into cubes.* This apparatus would seem suitable for installation in a cake mill, and certainly the cubes made save the dust usually present when cake is being crushed in the ordinary crusher. The meal is fed into a hopper from whence it drops into a

steam jacketed worm chamber, the end of which has suitably shaped holes through which the compressed meal is forced, and cut off into suitable lengths by a revolving cutter, like a gigantic sausage machine

On Stand 54, No. 377, Messrs. Robert Boby, Ltd., was shown a system of Pneumatic Transport for grain. The action is simply that of a vacuum cleaner. A rotary or other pump sucks a current of air carrying the grain with it along the pipe to its destination, the feeding end having a flexible pipe attached so as to be readily plunged into the mass of the grain. There is an ingenious arrangement for switching from one pipe to another, and for sealing the delivery end so that the air does not leak through the wrong way. One would like to know whether the dust and dirt that must be knocked off the grain in its passage through the pipes is in practice returned to the bulk of the grain so as to keep up the weight.

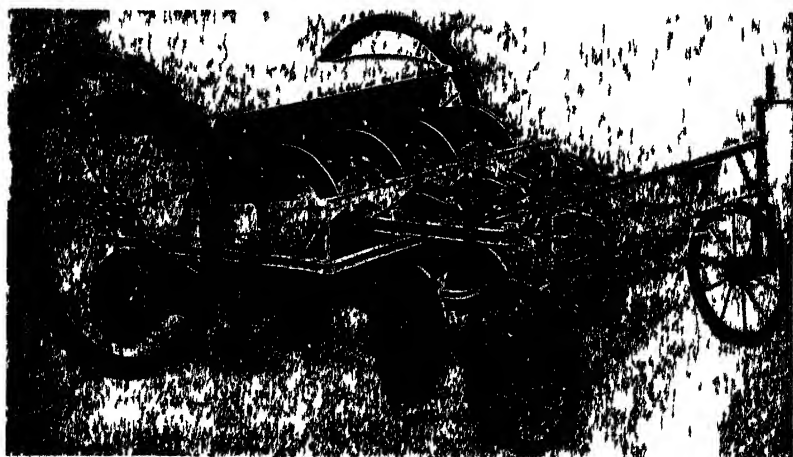


FIG 2—Moellenkamp's Potato Planting Machine

Stand 87, No. 692, F. W. Moellenkamp & Co., 85, Farringdon Street, London, E.C. This is a potato planting machine made in Germany. It plants two or four rows. Taking one row the action is as follows:—

Two discs running side by side are furnished with six sets of catches each, like a finger and thumb. Suppose the discs which are some 2 ft. in diameter are revolving clockwise the hopper for the potatoes is say at 8 o'clock, the finger and thumb opened passes upwards through a layer of potatoes, the catch is released and a potato is almost sure to be caught and carried round. To make the "almost sure" "quite sure"

is the function of the second disc revolving alongside, for when starting both discs revolve until all the fingers have seized potatoes, when the second one stops till such time as the finger and thumb of the continually revolving disc is empty when it comes to proper point of release about 2 o'clock, then the finger being closed on what is the thumb, catches the second or stand-by disc and revolves it one-sixth of a turn, and makes it drop a potato in place of the one that missed. Wheels following behind cover over the planted potatoes. The mechanism is ingenious, but an extended trial would be necessary to say if it were satisfactory in every way. It would appear to be a step in the right direction towards labour saving.

Stand 96, H. Hartjen & Co., Noble Street, London, have a well-made *Knapsack Sprayer* with a double nozzle for potatoes.

There is nothing remarkable except general good design in any of the exhibits until we come to Stand 267, No. 3409, a *Motor Horse Box*, shown by William Vincent, 76, Castle Street, Reading. No doubt this vehicle would do the work properly and convey two horses at 20 miles per hour, but there can be a very limited market for such a vehicle, and one would think that the vibration and shaking going along an ordinary road would be almost as bad as a jog home taken quietly. Certainly the details are well worked out, but one misses the provision for making tea for the rider and gruel for the horses. Water could easily be boiled from the engine exhaust if required.

Stand 269, No. 3414, John Fowler & Co. (Leeds), Ltd. *Motor Plough*—Anything exhibited by this pioneer firm deserves attention. It is doubtful, however, whether this exhibit shows a step in the right direction. The implement consists of a long frame carrying an oil engine at one end, and a single or two furrow plough at the other, beyond them again there is a pair of handles like an ordinary plough for the purpose of guiding the whole implement. There are two large carrying and driving wheels situated between the engine and the plough. These can be adjusted separately for height so that one runs in the furrow and one on top, or to go along the road they are at equal height. The whole control is by the man guiding the plough. It may with justice be objected that it would require a very skilled man indeed to walk behind the ploughs, control the engine, adjust the height of the wheels, and guide the machine all at once; besides, the tendency now is, if you are to have a machine instead of horses let it do as much work as possible with ease to the driver, and not just somewhat more than horses can do; and don't compel your driver to walk, thus limiting the output of the machine to the physical powers of the man in charge.

Stand 297, No. 3744.—Brazil, Straker & Co., Ltd., show a lifting and hauling winch worked by an oil engine, which should be of use to builders and contractors. The load is easily controlled and the whole thing worked by one man; it is impossible for the load to “take charge.”

Stand 311, No. 3975.—Blackstone & Co. show a 75 B.H.P. engine for crude oil with an arrangement for injecting the oil with a plunger worked by a spring and tripped at the correct moment. Doubtless a mechanical arrangement such as this is preferable to the complication of very highly compressed air such as is in use in a Diesel engine, and for agricultural work the hot bulb as opposed to the Diesel system is preferable.

Messrs. E. J. Harrison, Bamfords, Nicholsons of Newark, and Blackstones all showed side rakes, swath turners, and tedders of different patterns, but the Judges did not find anything special to notice, the excellence of the machines being about equal; but one particular mechanical movement may appeal to an individual purchaser more than another.

Stand 323, No. 4364.—E. H. Bentall & Co. show an improvement on their apparatus for sharpening chaff cutter knives which was shown last year, when it will be remembered it was only applicable to their own make of chaff cutter. This appliance can be fitted to any make of machine. The principle is substantially the same as last year. It is possible to grind a badly notched blade to its proper shape and with a sharp edge in a few minutes.

The grinding mills by this firm have the same flour dresser as that shown last year, but this is combined with a crusher and elevator which make it a more compact plant than if the machines were separate.

The other implements entered for the medal do not call for any special mention.

It cannot be said that there is any very special feature to notice in this year's show, taken as a whole, to make it remarkable.

Some small details noticed are as follows:—The mechanically operated lubricator, as for instance those worked by a ratchet and wheel on a small pump shaft, seems to be becoming general on steam tractors, which would appear to be an advance, but few makers seem to put an oil catcher under the engine and between it and the boiler. It is a very simple idea and would add to the cleanliness of the engine and comfort of the driver. Small petrol and oil engines are as a rule fitted with the open tank system of cooling. One maker told the Judges that in small colonial dairies this was found very useful, as after running the engine there was the hot water ready for washing up without further trouble.

Messrs. Blackstone have fitted to an oil engine a modification of the Humphrey's gas pump for circulating the water, which is very simple. The circulating water is cooled by passing over a cone of perforated metal, and then falls into a small tank some 15 in. deep, of somewhat larger diameter than the base of the cone. Along side of this is fixed the barrel of the pump, a plain vertical piece of pipe about 2 in. diameter, the top communicating by a tube with the exhaust pipe, the bottom on one side opening with a non-return valve into the tank, and on the other with a delivery valve to the rising main to the top of the cooling cone. It will be seen that the water from the tank will find its own level in the vertical pipe say to 12 in. for example; when the exhaust valve opens there is a temporary rise of pressure in the vertical pipe and part of the water is forced up the rising main past the delivery valve; on the suction stroke of the engine there being no pressure in the vertical pipe water again rises to the level of that in the tank. It will be noticed that the greater the number of explosions or the greater their force, the more water is delivered, which is as it should be.

There were of course many exhibits which cannot be said to bear directly on agriculture but still are of interest to the engineer. Such a one is the Suction Gas Plant shown by Messrs. Crossley. The engines of this firm may be said to embody all the latest improvements, such as ring oiling for the bearings, and in the larger sizes very efficient governing by variable admission of gas and air. As regards the gas producer the grate is open to the atmosphere and in full view of the attendant, being formed of three discs of plate one under the other, the hole in the lower one being smaller than that in the one above. The column of fuel thus rests on a bed of ash and can easily be clinkered. There is no water jacket to the producer proper, the gases from which come off hot and surround the boiler which is made of tubes with gills cast on, the steam being taken by a pipe and delivered close to the ashes lying on the grate plates, so that it is drawn into the fire on the suction stroke of the engine. The boiler thus helps to cool the gas as well as to raise steam. After leaving the boiler flue, so to speak, the gas meets two cascades of water coming from the scrubber, before ever it comes in contact with the wet coke. The fan for blowing up the fire is of course on the engine side of the producer, and is a suction instead of a pressure fan.

There has hitherto been a difficulty in using bituminous coal in suction gas plants, due to the formation of tar.

Messrs. Kynoch, Stand 328, show a *Bituminous Suction Gas Plant* of a somewhat novel construction. Broadly speaking

the novelty consists in taking the gas away from the bottom of the producer instead of the top. Imagine a box shaped producer fed from the top. As tar forms from the distillation of the coal above the incandescent zone it will gradually

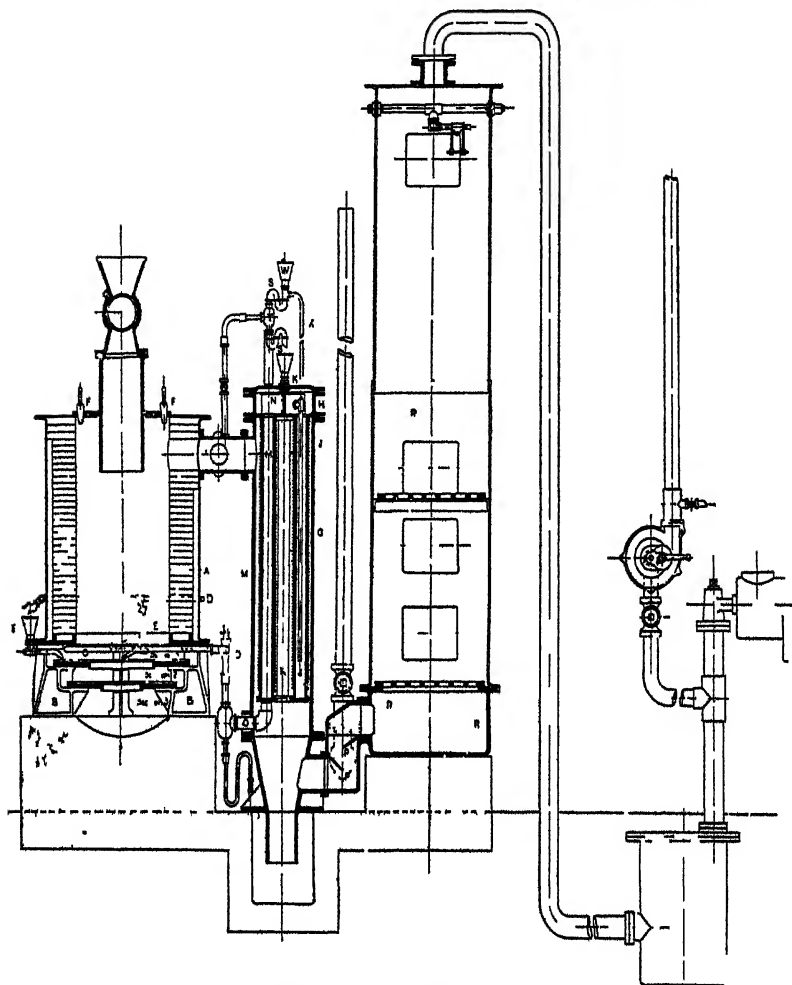


FIG 3 -Crowley & Suction Gas Plant

work its way down into the incandescent fuel and be gasified and drawn off downwards. There are eight holes at intervals up the side of the producer for pricking the fire and allowing the air to enter at such places as shall enable the attendant to

regulate the position of the incandescent zone and ensure the gasification of the tarry matter.

Road Rollers seem to be still driven, as a rule, by steam; of seven makers who exhibited only one shows motor driven rollers, and for the 10 ton size the price is a good deal more than that for steam. Messrs. Barford & Perkins show no fewer than 5 motor rollers of different sizes and weights, the smallest for agricultural purposes weighing 33 cwt. and costing 190%.

Motor Vans and Lorries are rapidly increasing in number for medium and light weights, but steam is likely to hold it's own for Road Rollers and heavy Lorries for a long time to come.

One of the best stands was that of the Associated Portland Cement Manufacturers, where machines were shown in action making concrete articles, from building blocks to drain pipes. There were many examples of articles for estate use moulded in quite simple home made moulds.

In concluding this short report the Judges wish to thank the Stewards, Mr. F. S. W. Cornwallis and the Hon. J. E. Cross, for their assistance, and Mr. F. S. Courtney, M.Inst.C.E., the Consulting Engineer, for his technical advice.

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MILK AND BUTTER TESTS AT THE BRISTOL SHOW, 1913.

I.—MILK-YIELD TRIALS.

THE prizes offered in the Bristol Schedule for Milk-yields were confined to pedigree cattle of their respective breeds, thus reducing the classes to twelve as against thirteen at Norwich in 1911, where Dairy Cattle were allowed to compete.

The number of cows in these classes at Bristol showed a decrease as compared with Norwich, the Shorthorns, Red Polls and Dairy Cattle at that Show being 28, 19 and 5, as against 15, 4 and 0 at Bristol, but with these exceptions the other breeds were well represented, the number of cows tested—94—being only exceeded at Norwich, since these classes were first started in 1906.

The scale of points and the conditions under which the trials were carried out were the same as in 1911, the cattle being milked out on Wednesday, July 2, at 5 p.m., the milk for the next 24 hours being taken for these and the Butter Test

TABLE I.—MILK-YIELD CLASSES AT BRISTOL, 1913.

No. in Catalogue	Exhibitor	Name of cow	Date of birth	Date of last calf	No. of days in milk	Total milk yielded in 34 hours	Points			Awards
							Fat per cent	Milk	Lactation	
Class 110										
600	Capt. Wills	Gentle.	Apr. 22, 1910	1913	89	Lb. oz.	28.57	44.65	4.90	1st Prize.
588	C. R. W. Adams	Babraham Eva Bates	Sept. 9, 1905	June 11	23	57 14	3.53	71.95	1.90	H.O.
863	R. W. Hobbs & Sons	Rose of Puddington.	Nov. 3, 1908	May 13	46	57 14	3.53	67.95	1.10	H.O.
864	R. W. Hobbs & Sons	Solo 60th	Dec. 20, 1905	May 18	51	41 0	9.75	69.60	1.60	Fat Below Standard.
866	Lord Lucas	Lilac 4th	Nov. 8, 1907	June 9	4	55 12	5.52	66.70	2.00	3rd Prize.
867	G. L. M. Lutwyche	Kathenda	Oct. 25, 1907	May 4	60	53 10	2.72	66.63	2.00	Fat Below Standard.
873	J. M. Strickland	Brandaly's Princess	Feb. 30, 1905	Apr. 27	75	53 12	3.05	66.63	2.00	H.O.
876	J. A. Williams	Red Rose 2nd	Jan. 30, 1905	May 19	49	53 12	3.05	66.63	2.00	Fat Below Standard.
877	J. A. Williams	Roseleaf 2nd	Nov. 15, 1907	June 23	19	53 12	3.05	66.63	2.00	H.O.
878	Capt. Wills	Runglet 9th	June 12, 1904	June 11	41	49 14	2.87	66.63	2.00	Fat Below Standard.
879	H. F. Wright, M.P.	Barrington Princess 4th.	Aug. 13, 1905	June 3	30	35 4	4.02	66.63	2.00	2nd Prize
880	H. F. Wright, M.P.	Snowdrop 2nd.	June 20, 1905	May 28	38	56 4	3.53	66.63	2.00	H.O.
887	S. Sanday	Barrington Belle	Feb. 14, 1906	May 6	53	44 0	4.32	66.63	2.00	H.O.
891	F. H. Thornton	Jewel 3rd	Jan. 1, 1910	Dec. 11, 1912	204	20	4.05	66.63	2.00	H.O.
897	R. Heath	Lady Victor 4th.	Nov. 2, 1903	May 11	53	54 14	3.80	66.63	2.00	H.O.
Class 119										
921	J. Evans	Coddington Rosemary	May 13, 1906	June 9	24	56 12	3.82	66.63	2.00	Fat Below Standard.
941	J. Evans	Burton Beauty 3rd.	Mar. 1, 1905	May 19	45	44 14	3.85	66.63	2.00	H.O.
943	J. Evans	Burton Pride 7th	Feb. 28, 1905	Apr. 26	158	60 10	4.07	66.63	2.00	1st Prize.
944	H. Needham	Canwick Cherry 2nd	Apr. 3, 1907	May 2	62	66 4	5.21	66.63	2.00	2nd Prize.
945	H. Needham	Canwick Milkier 2nd	Jan. 27, 1907	Apr. 24	88	82 8	2.55	66.63	2.00	Fat Below Standard.
946	O. G. Scorer	Bracebridge No. 3 B	Sept. 28, 1903	Apr. 6	70	84 14	3.77	66.63	2.00	H.O.
947	O. G. Scorer	Bracebridge No. 188 B	May 12, 1906	Apr. 24	32	86 4	3.45	66.63	2.00	3rd Prize.
949	F. H. Wilkinson	Sherwood Broadhooks	Jan. 20, 1906	June 1	90	56 12	3.80	66.63	2.00	H.O.
Class 126										
1056	M. J. Kidner	Zenobia 20th	Mar. 22, 1903	Apr. 19	80	56 12	3.80	66.63	2.00	H.O.
1062	Viscount Chetwynd	Bowden Buttercup	Dec. 2, 1905	Apr. 14	75	58 2	3.45	66.63	2.00	2nd Prize.
1063	Viscount Chetwynd	Compton Lovely	Feb. 5, 1904	June 10	23	48 4	4.45	66.63	2.00	H.O.
1064	John H. Chock	Curly A. 256	Jan. 1903	May 12	52	40 4	4.45	66.63	2.00	1st Prize.
1085	John H. Chock	Favourite	Jan. 15, 1907	Apr. 27	91	63 0	3.07	66.63	2.00	H.O.
1086	John H. Chock	Wynford Toby A. 110	Jan. 1905	Apr. 27	62	14 8	4.45	66.63	2.00	H.O.
1087	R. A. Clarke	Maud 1st.	July 17, 1908	Jan. 21	163	25 17	3.95	66.63	2.00	3rd Prize.
1088	Loram Brothers	Ladies.	6 years	Apr. 30	64	97 8	3.25	66.63	2.00	H.O.
1089	Loram Brothers	Orange	7 years	Apr. 13	76	48 4	3.25	66.63	2.00	3rd Prize.
Class 141										
1116	Ben Luscombe	Cherry 3rd.	Mar. 18, 1904	May 10	54	42 12	3.85	66.63	2.00	3rd Prize
1119	W & H. Whitley.	Primley Bloom.	Mar. 29, 1903	Apr. 12	82	57 12	3.90	66.63	2.00	2nd Prize
1120	W & H. Whitley.	Primley Blossom.	Sept. 1, 1905	Apr. 2	93	50 10	4.40	66.63	2.00	H.O.
1121	W & H. Whitley.	Princess 3rd	Nov. 28, 1905	June 4	20	90 6	3.45	66.63	2.00	H.O.

TABLE I.—MILK-YIELD CLASSES AT BRISTOL, 1913—continued.

No in Catalogue	Exhibitor	Name of cow	Date of birth	Date of last calf	No of days in milk	Total milk yield in 24 hours	Fat per cent- age	P. ints				Awards	
								Lb. oz	Fat per cent by 4	Milk	Lacta- tion		
Class 146													
1461	Lord Gerard	<i>Longhorns</i>	May 4, 1908	1913	150	83 10	4.17	33.62	16.68	11.90	62.20	1st Prize	
1462	J. L. & A. Riley	Eleanor of Eastwell	Feb 8, 1905	Jan. 25	38	38	4.30	38.71	17.20	Nil	55.70	2nd Prize.	
1463	W. Hanson Sale	Fudley Sapphire	May 20, 1904	Apr. 21	73	49	2.77	40.12	11.08	3.30	68.50	Fat Below Standard	
Class 147													
1471	Kenneth M. Clark	<i>Red Polls</i>	Sept 3, 1904	Apr 21	73	54	8.32	54.50	13.28	3.30	71.08	3rd Prize.	
1472	Kenneth M. Clark	Sudbourne Queen 1st	Apr. 19, 1906	May 8	56	58	3.20	58.57	13.80	1.60	73.37	2nd Prize	
1473	Lord Cranworth.	Sudbourne Sadie 1st	Apr. 10, 1910	Mar. 31	94	30	4.40	30.25	16.20	5.40	61.85	H O	
1474	The Marchioness of Graham	Meadow Ruby	Apr. 3, 1905	May 5	59	54	2	4.55	54.12	17.40	1.90	73.42	1st Prize.
Class 148													
1481	Lieut.-Col Ferguson-Buchanan	<i>Ayrshires</i>	Apr. 17, 1905	Mar. 22	103	36	8.10	36.51	12.40	6.30	55.20	1st Prize	
1482	Lieut.-Col. Ferguson-Buchanan	Anchentorrie Mortola 2nd	Apr. 15, 1910	June 20	14	30	12	2.82	30.75	11.28	Nil	42.05	Fat Below Standard
1483	W. & J. Kerr	Old Gratney Juanita 2nd	Mar., 1908	May 22	42	38	0	3.35	38.00	13.40	20	51.60	Points for prize (55) not obtained
1484	W. & J. Kerr	Old Gratney Yellow Bess	Apr., 1907	May 23	41	39	0	2.87	39.00	11.48	10	50.58	Fat Below Standard
Class 149													
1491	John Bromet	<i>British Heifers</i>	1908	June 12	21	60	2	2.90	60.12	11.60	Nil	71.72	Fat Below Standard
1492	John Bromet	Routh Queen	Aug., 1903	May 25	39	64	2	2.22	64.12	8.88	Nil	69.00	Fat Below Standard
1493	E. Selmer	Stanfield Phoebe	1907	Apr. 29	65	62	10	3.30	62.62	13.20	250	78.32	1st Prize
1494	Major G. B. Powell	Wigington Maggie	Jan. 13, 1910	May 18	46	48	14	3.07	48.57	12.28	60	61.75	2nd Prize
Class 150													
1501	Ernest Bewley	<i>Jerseys</i>	Jan. 12, 1908	Feb. 24	140	40	10	5.25	40.6	21.00	390	70.52	H O
1502	Ernest Bewley	Angerer Golden Maid	Feb. 10, 1908	Apr. 18	80	42	6	3.62	42.57	14.48	400	60.75	H O
1503	Joseph Brutton	Lilac	Aug. 12, 1901	Mar. 18	107	44	12	4.85	44.75	19.40	670	70.85	H O
1504	Earl Cadogan, K. G.	Irish Lass	Feb. 11, 1908	Mar. 17	107	37	0	4.52	37.00	18.08	670	61.75	H O
1505	Earl Cadogan, K. G.	Eventide Lass	Feb. 16, 1908	Mar. 17	108	35	0	4.20	35.00	18.80	680	58.60	H O
1506	Mr. H. Cornes	Gauntlet 9th	Mar. 1, 1908	Mar. 18	99	35	10	3.10	35.62	12.40	680	53.92	H O
1507	Mrs. Kyrse Mossell	Victorious 2nd	Apr. 14, 1908	Mar. 18	107	48	8	4.70	48.50	18.80	670	61.00	H O
1508	Mrs. Kyrse Mossell	Flowering 3rd	Apr. 1, 1907	Apr. 28	66	39	0	4.12	39.00	16.48	2.60	58.08	H O

TABLE I.—MILK-YIELD CLASSES AT BRISTOL, 1913—continued.

No in Catalogue	Exhibitor	Name of cow	Date of birth	Date of last calf	No. of days in milk	Total milk yield in 24 hours	Fat per cent. age	Points			Awards	
								Milk	Fat per cent. by 4	Lactation		
Class 195												
1432	Mrs. Byres Monsell	Jersey-continued.	May 28, 1909	1813	51	46 14	4.80	46.87	19.20	1.10	67.17	H.O.
1433	Mrs. McIntosh	Golden Rozel	Jan. 21, 1905	May 13	70	43 14	5.03	43.87	14.48	5.00	61.35	H.O.
1438	A. Miller-Hallett	Goddington Foxglove	Apr. 21, 1905	Apr. 24	80	39 4	4.43	39.25	17.08	5.00	61.35	H.O.
1440	R. H. Palmer	Golden Age Rd.	Jan. 2, 1906	Apr. 22	72	39 0	4.57	39.00	18.28	5.20	60.48	H.O.
1445	Lord Rothchild.	Lexdon Lady	Dec. 5, 1903	Mar. 23	104	52 0	5.87	52.63	25.48	6.40	82.50	1st Prize.
1446	Lord Rothchild.	Triangle 2nd	Jan. 23, 1905	Jan. 23	162	44 0	4.70	44.00	18.80	12.00	74.80	H.O.
1448	J. H. Smith-Barry	Caprice	July 23, 1905	Feb. 13	162	48 14	4.80	48.87	19.20	11.20	79.77	H.O.
1450	J. H. Smith-Barry	Marionette.	Oct. 3, 1904	Feb. 13	140	48 8	5.32	48.50	21.28	10.00	79.78	2nd Prize.
1451	J. H. Smith-Barry	New Year's Gift	Jan. 1, 1907	Jan. 15	169	52 4	5.80	52.25	15.20	12.00	79.45	3rd Prize.
1453	Dame E. F. Smyth	Sweetmeat.	May 11, 1908	Apr. 27	67	84 13	5.62	84.75	23.08	2.70	59.53	H.O.
1458	Horace Walker	Stablebread 12th	Feb. 20, 1906	May 19	45	41 13	3.62	41.75	14.08	5.0	58.33	H.O.
1464	O. F. Mosley	Pixie	May 30, 1910	Mar. 21	104	27 4	3.70	27.25	14.80	6.40	48.45	—
Class 202												
1568	W. T. Curtis	Guernsey	Oct. 9, 1905	Mar. 24	101	50 12	3.72	50.75	14.88	6.10	71.73	3rd Prize.
1571	A. W. Bailey Hawkins	Polly 3rd of the Mill	Oct. 9, 1905	Mar. 24	101	50 12	3.72	50.75	14.88	6.10	71.73	3rd Prize.
1572	A. W. Bailey Hawkins	Primula of Blunham	June 27, 1907	May 13	46	37 2	5.57	37.12	14.28	7.00	62.00	—
1574	Sir H. F. Lennard, Bt.	Tempsford Beauty	Jan. 3, 1906	June 13	20	43 4	5.40	43.25	21.60	N11	64.85	H.O.
1577	H. F. Plunipre	Wickham Fancy 2nd	Nov. 3, 1907	Mar. 23	97	52 4	4.62	52.25	18.08	5.70	70.03	1st Prize.
1578	H. F. Plunipre	Ashtamabel	June 6, 1907	Mar. 23	89	38 0	4.47	38.00	17.88	5.90	61.78	H.O.
1578	H. F. Plunipre	Lottie 1st of La Hogne	Nov. 14, 1903	Mar. 29	98	30 6	4.06	30.57	18.20	5.60	53.17	—
1580	F. Pratt Birtwistle	Daisy of Les Mauxmarquis	Mar. 16, 1903	May 17	47	33 14	3.85	33.87	15.40	7.0	49.97	—
1581	Canon Radley-Wint	Ladock Princess	Jan. 8, 1907	Apr. 16	79	63 2	4.45	63.12	17.80	5.90	74.53	2nd Prize.
1587	Canon Radley-Wint	Ladock Beauty	Jan. 22, 1906	Apr. 27	67	31 8	5.60	31.50	23.20	2.70	57.40	H.C.
1588	J. F. Remnant, M.E.	Tracis 3rd	Jan. 14, 1909	Apr. 28	68	46 14	3.57	46.87	15.88	2.80	65.55	H.C.
Class 207												
1642	L. Currie	Kerries	Dec. 10, 1906	May 5	59	44 4	5.02	44.50	14.48	1.90	60.88	2nd Prize.
1643	L. Currie	Duv Rosebud	1908	May 23	41	41 12	5.40	41.75	13.60	1.0	55.45	2nd Prize.
1644	A. A. Lyle	Minley Mistress	1906	May 23	41	41 12	5.40	41.75	13.60	1.0	55.45	2nd Prize.
1646	R. Tait Robertson	Aileen	1906	Apr. 29	65	40 4	5.02	40.50	12.08	2.50	58.08	H.O.
1647	E. Royle, M.P.	Walton Can Can	1905	May 24	40	45 0	4.80	45.87	11.20	N11	57.07	Below Standard.
1649	T. Waite	Caythorpe Kitty	1902	Feb. 6	147	28 0	4.12	28.00	16.48	10.70	55.18	H.O.
1649	T. Waite	Kilmorna Waterville 1st	1900	Feb. 17	136	41 0	5.05	41.00	15.80	9.60	66.40	1st Prize.
Class 212												
1666	H.M. The King	Dexlers	1907	May 25	39	44 8	4.27	44.37	17.08	N11	61.45	1st Prize.
1669	B. de Bertodano	Dinah	1907	May 1	63	27 2	2.65	26.12	10.20	2.90	47.62	Below Standard.
1671	B. de Bertodano	Cowbridge Dainty Maid	Mar. 12, 1908	June 9	24	37 10	3.17	37.62	12.08	N11	64.80	2nd Prize.
1673	H.M. Gibbs	Cowbridge Shelagh	June 1, 1907	May 5	51	8 5.75	5.15	51.50	15.00	1.90	48.40	H.O.
1676	R. Tait Robertson	Barrow Duchess 3rd	May 12, 1909	May 1	61	34 4	4.40	34.00	12.80	2.10	38.70	—
1677	H.M. The King	Dusky	1910	Mar. 1	124	29 4	4.40	29.25	17.60	5.40	55.25	3rd Prize.

Trials. Samples of milk for analysis were taken at each milking on Thursday by Dr. Voelcker.

Table I. on pp. 268-70 gives the full results of the trials and the prize winners in their respective classes.

The next table gives the averages of all the cattle tested.

TABLE II.

No. of cows competing	Breed	Days in milk	Milk	Fat per cent.	Points			
					Milk	Fat	Lactation	Total
			Lb. oz					
15	Shorthorn .	55	46 11½	3.40	46.73	13.60	1.50	61.83
9	Lincoln. Red do.	67	58 10	3.17	58.62	13.88	2.70	75.20
9	Devon .	76	40 9½	3.71	40.58	14.84	3.60	59.02
4	South Devon .	64	45 12	4.02	45.75	16.08	2.40	64.23
3	Longhorn .	90	40 6½	3.71	40.11	14.96	5.00	60.37
4	Red Poll .	70	49 7	3.73	49.43	11.92	3.00	67.35
4	Ayrshire .	49	36 1	3.03	36.06	12.11	.90	49.85
4	Holstein .	42	58 15	2.87	58.93	11.45	.20	70.61
20	Jersey .	101	41 9½	4.45	41.59	17.80	6.10	65.49
10	Guernsey .	72	41 11½	4.38	41.71	17.52	3.20	62.43
6	Kerry .	81	40 4½	3.48	40.27	13.92	4.10	58.29
6	Dexter .	61	35 5	3.55	35.31	14.20	2.10	51.61

In looking at the total points, the low percentage of fat in the milk from the Holsteins must be taken into consideration.

Twelve animals were disqualified, the average percentage of fat in the two milkings not coming up to the standard of 3 per cent. The particulars are as follows :—

3 Shorthorns	out of 15 sampled
2 Lincolnshire Red Shorthorns	" 9 "
1 Longhorn	" 3 "
2 Ayrshires	" 4 "
2 Holsteins	" 4 "
1 Kerry	" 6 "
1 Dexter	" 6 "

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II.—BUTTER TESTS (CLASS 215, A & B).

The number of cattle competing in these trials at Bristol was 58, three less than at Norwich, but nine more than at Liverpool in 1910, which was the largest number of cows tested up to that time at the Royal Agricultural Society's Shows.

The conditions and scale of points governing the trials were the same as in previous years, the heavy weight, class A, consisting of 41 animals of various breeds, the light weight numbering 17, Jerseys only.

Table III on pp. 272-4 gives the full result of the trials, with the prizes, commended cards and certificates of merit awarded and the practice adopted in churning.

TABLE III.—RESULTS OF BUTTER TESTS AT BRISTOL, 1913.

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CLASS 215 A—COWS IN-MILK EXCEEDING 900 LB LIVE WEIGHT

No in Class	Exhibitor	Name of cow	Breed	Live weight	Date of birth	Date of last calf	No of days in milk	Milk yield in 24 hours	Butter yield 1 lb milk	Colour and quality of butter		No of points for butter	No of points for period of lactation	Total No of points	Awards	CHURNING TABLE							
										Ratio, viz 1 lb milk to 1 lb butter	Quality					Time	Began	Finished	(minutes)	Dairy	Cream and churn	Buttermilk	
863	R W Hobbs & Sons	Rose of Pudding	Shorthorn	1400	Nov 2, 08	May 13, 1913	61	41 4	1 48	2719	Poor	Fair	20 50	1 10	21 60		12 21	12 47	20	0	23	58	
864	R W Hobbs & Sons	Solo 90th	Shorthorn	1428	Dec 24, 08	May 18, 1913	46	51 0	1 04	40 45	Poor	Poor	16 50	60	17 10		12 18	12 24	16	0	23	57	
865	Lord Lucas	Lilac 4th	Shorthorn	1358	Mar 3, 06	June 9, 1913	21	65 10	1 104	33 27	Fair	Fair	23 75	2 00	25 75		12 12	12 41	18	70	62	61	
866	G L M Lukwiche	Red Rose 2nd	Shorthorn	1215	Oct 25, 07	May 27, 1913	27	43 12	1 104	33 45	Fair	Good	23 50	2 00	25 50		11 50	1 24	38	0	23	58	
867	J A Williams	Red Rose 2nd	Shorthorn	1288	Jan 30, 07	May 27, 1913	27	44 12	1 104	33 45	Fair	Good	23 50	1 25	25 12		11 50	1 25	9	0	23	59	
868	J A Williams	Roseleaf 2nd	Shorthorn	1212	Jan 30, 07	June 14, 1913	30	52 12	1 141	27 41	Good	Good	30 75	2 11	30 75		11 22	1 2	46	70	62	62	
869	H F Wright, M P	Barrington	Shorthorn	1466	Aug 18, 08	June 3, 1913	50	49 14	1 134	33 84	Fair	100	12 50	2 11	12 50		11 17	1 10	40	0	23	58	
870	H F Wright, M P	Princess 4th	Shorthorn	1414	June 1, 05	May 30, 1913	31	50 12	1 21	31 94	Fair	Fair	18 50	2 11	18 50		11 22	1 59	27	60	62	62	
871	S Sandey	Snowdrop 5th	Shorthorn	1412	June 24, 09	May 28, 1913	26	56 4	1 104	33 80	Fair	Fair	18 50	2 11	18 50		11 22	1 59	27	60	62	62	
872	H H Thornton	Jewel 1st	Shorthorn	1314	Feb 14, 09	May 6, 1913	58	44 0	1 134	24 70	Good	Good	23 50	1 80	25 30		11 51	1 35	30	0	23	57	
873	H H Thornton	Lady 1st	Shorthorn	1280	Jan 1, 10	Dec 11, 1913	24	29 12	1 134	24 41	Fair	Good	19 50	1 20	21 10		10 41	1 17	31	0	23	57	
874	J Evans	Goodman	Lancashire	1456	Nov 3, 08	May 11, 1913	53	54 14	2 0	27 48	Good	Good	32 00	1 30	32 30		10 46	1 24	39	0	23	59	
875	J Evans	Rosemary	Lancashire	1484	May 15, 08	June 9, 1913	24	56 10	1 124	31 78	Fair	Fair	23 50	2 11	23 50		10 20	1 0	30	0	23	60	
876	J Evans	Barton Beauty 2nd	Lancashire	1404	Mar 1, 08	May 19, 1913	45	63 12	1 134	24 15	Fair	Fair	23 50	2 11	23 50		9 46	10 48	7	62	62	61	
877	J Evans	Barton Pride 7th	Lancashire	1302	Feb 28, 08	April 20, 1913	74	44 14	1 134	24 51	Good	Good	23 50	2 11	23 50		9 44	10 2	44	62	62	61	
878	J Evans	Barton Philp 8th	Lancashire	1302	Feb 28, 08	April 20, 1913	74	44 14	1 134	24 51	Good	Good	23 50	2 11	23 50		9 44	10 2	44	62	62	61	
879	J Evans	Barton Philp 8th	Lancashire	1302	Feb 28, 08	April 20, 1913	74	44 14	1 134	24 51	Good	Good	23 50	2 11	23 50		9 44	10 2	44	62	62	61	
880	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
881	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
882	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
883	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
884	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
885	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
886	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
887	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
888	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
889	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
890	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
891	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
892	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
893	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
894	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
895	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
896	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
897	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
898	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
899	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
900	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
901	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
902	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
903	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
904	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
905	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
906	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
907	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
908	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
909	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
910	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
911	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
912	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
913	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
914	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
915	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
916	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
917	H Neesham	Canwick	Cherry	Lancashire	1320	April 3, 06	Jan 26, 1913	108	60 70	2 8	24 25	Good	Fair	40 00	1 180	51 80		9 35	10 4	20	63	58	58
918	H Neesham	Canwick	Cherry	Lancashire	1320	April																	

TABLE III.—RESULTS OF BUTTER TESTS AT BRISTOL, 1913—*continued*

CLASS 215A—COWS IN MILK, EXCEEDING 900 LB LIVE WEIGHT

[illegible]

1. The "Butter Ratio" represents the number of lb of milk required to make 1 lb of butter. Ten lb of milk are reckoned as equal to an imperial gallon.

TABLE III.—RESULTS OF BUTTER TESTS AT BRISTOL, 1913—continued.
CLASS 215 B.—COWS IN-MILK NOT EXCEEDING 900 LB. LIVE WEIGHT.

No. in Catalogue	Exhibitor	Name of cow	Breed	Live weight	Date of birth	Date of last calf	No. of days in milk	Milk yield in 24 hours	Butter yield	Ratio of milk to butter	Colour and quality of butter		No. of points for butter	No. of points for lactation	Total No. of points	Awards	TURNING TABLE					
											Colour	Quality					Began	Finished	Time	Temperature, ° F		
1413	R. Bewley	Angereux Golden Maid	Jersey	853	Jan. 12, '08	Feb. 24	128	40 10 2	8 1/2	18.80	Excellent	Excellent	35.90	8.90	44.80	Cert of Merit	9 58	10 38	40	64	53	56
1414	R. Bewley	Lilac	Jersey	840	Feb. 10, '08	Apr. 14	80	42 6 1 11	25.11	25.11	Good	Fair	27.90	4.00	31.00	"	10 13	10 31	36	63	53	58
1415	Earl Cadogan, K.G.	Eyre's Lady's Lass	Jersey	819	Feb. 11, '08	Mar. 18	107	37 0 1 14 1/2	19.40	19.40	Fair	Fair	30.50	6.70	37.20	Cert. of Merit	10 8	10 34	26	65	52	60
1416	Earl Cadogan, K.G.	Gaunders 9th.	Jersey	899	Feb. 14, '08	Mar. 17	108	35 0 1 6	25.45	25.45	Fair	Fair	22.00	6.80	28.80	"	10 4	10 32	48	63	52	58
1425	Dr. H. Corner	Victorious 2nd	Jersey	709	Mar. 1, '08	Mar. 26	99	35 10 14 1/2	29.31	29.31	Excellent	Good	14.50	5.90	20.40	"	10 50	11 30	40	67	52	60
1427	Jersey de Knoop	Seamless	Jersey	888	Aug. 25, '06	Apr. 22	72	45 2 1 9	27.60	27.60	Good	Good	25.00	3.20	28.20	"	4 7	4 46	39	70	52	54
1430	Mrs. Eyles-Moncell	Fleetwing 3rd	Jersey	712	Apr. 14, '08	Mar. 19	107	38 8 1 14 1/2	20.03	20.03	Excellent	Excellent	30.75	6.70	37.45	Cert. of Merit	4 21	4 42	21	70	52	60
1431	Mrs. Eyles-Moncell	Heartsease Lass	Jersey	882	Apr. 1, '07	Apr. 25	68	29 0 1 7 1/2	20.83	20.83	Good	Good	23.25	2.60	25.85	"	4 5	4 31	29	70	52	58
1432	Mrs. Eyles-Moncell	Risful	Jersey	712	May 23, '08	May 13	51	46 14 12 7 1/2	18.10	18.10	Good	Good	39.50	1.10	40.60	Cert. of Merit	3 50	4 12	22	70	52	58
1433	Mrs. McIntosh	Golden Hazel	Jersey	861	Jan. 12, '08	Apr. 24	70	43 14 1 8 1/2	26.65	26.65	Excellent	Excellent	24.50	3.00	27.50	"	12 38	1 20	42	70	52	62
1440	R. H. Palmer	Golden Age 3rd	Jersey	768	Jan. 2, '09	Apr. 22	72	34 0 1 14 1/2	20.45	20.45	Excellent	Excellent	30.50	3.20	33.70	Cert. of Merit	2 46	3 29	53	70	52	56
1445	Lord Rodchield	Laxton Lady	Jersey	771	Dec. 5, '08	Mar. 21	104	42 10 3 4	16.19	16.19	Good	Good	53.00	6.40	59.40	1st Prize & Gold Medal	2 16	3 58	39	70	52	57
1450	J. B. Smith-Barry	Marionette	Jersey	891	Oct. 3, '04	Feb. 18	140	48 8 12 11 1/2	17.83	17.83	Good	Good	43.50	10.00	53.50	2nd Prize & Silver Medal	12 40	12 36	16	71	52	58
1451	J. H. Smith-Barry	New Years Gift	Jersey	896	Jan. 1, '07	Jan. 18	168	52 4 12 11 1/2	24.95	24.95	Good	Good	33.50	12.00	45.50	3rd Prize	12 24	12 20	26	70	52	59
1452	Dame Smyth	Sweetheart	Jersey	847	May 11, '08	Apr. 27	67	34 12 2 1 1/2	16.72	16.72	Good	Good	33.25	2.70	35.95	Cert. of Merit	12 16	12 51	35	70	52	58
1453A	Hon. Mrs. Tennant	Handwork	Jersey	846	Mar. 6, '08	Dec. 31/12	184	31 4 1 10 1/2	19.64	19.64	Excellent	Excellent	36.25	12.00	48.25	Cert. of Merit	11 54	12 17	23	70	52	60
1454	O. F. Woelfel	Pixie	Jersey	658	May 30, '10	Mar. 21	104	27 4 1 1 1/2	24.91	24.91	Good	Good	17.50	6.40	23.90	"	12 11	12 -0	39	70	52	62

¹ The "Butter Ratio" represents the number of lb. of milk required to make 1 lb. of butter. Ten lb. of milk are reckoned as equal to an imperial gallon.

With the exception of the Shorthorns, which did not quite come up to expectations, the figures show that the cows competing were quite up to the average of cattle tested at the Society's Shows.

The next table gives these averages:—

TABLE IV.—*Averages of Cattle Tested.*

No. of cows competing	Breed	Live weight	Days in milk	Milk	Butter	Ratio	Points
		Lb.		Lb. oz.	Lb. oz.		
11	Shorthorn . .	1399	54	46 12 ³ / ₄	1 6 ¹ / ₂	32·91	24·15
8	Lincoln. Red do.	1414	71	57 10 ¹ / ₂	1 14 ³ / ₈	30·47	33·38
7	Devon . .	1272	64	45 10 ¹ / ₄	1 11 ¹ / ₈	27·02	29·75
3	South Devon .	1680	76	50 12 ¹ / ₂	1 15 ¹ / ₂	25·66	35·26
1	Longhorn . .	1456	38	38 8	1 10 ¹ / ₄	23·46	26·25
1	Holstein . .	1260	65	62 10	1 12 ¹ / ₂	35·15	31·00
22	Jersey . .	849	105	40 11 ³ / ₄	1 14 ¹ / ₂	21·01	37·47
5	Guernsey . .	1017	71	38 3 ¹ / ₂	1 11 ¹ / ₂	22 15	30·70

In the report on these trials in 1911, the butter ratio figures under their respective breeds at each of the Society's Shows, commencing with Derby in 1906, were given, and the average number of cattle and butter ratios at the six Shows were shown in the last column. Table V. gives these last figures and the corresponding figures at Bristol:—

TABLE V.

Breed	Six Shows		Bristol	
	No of Cows	Butter ratio lb.	No. of Cows	Butter ratio lb.
Shorthorn	41	32·15	11	32·91
Lincolnshire Red Shorthorn	30	29·02	8	30·47
Devon	10	32·60	7	27·02
South Devon	19	31·37	3	25·66
Longhorn	4	24·00	1	23·46
Red Poll	10	36·84	—	—
Ayrshire	4	29 17	—	—
Holstein	—	—	1	35·15
Jersey	105	20·57	22	21·01
Guernsey	11	21·66	5	22·15
Kerry	2	32·35	—	—

III.—EXPERIMENTS IN BUTTER MAKING FROM WHOLE AND MIXED MILKS.

To ascertain whether more butter could be obtained from two milks—one showing a higher percentage of fat than the other—when mixed, than from the same quantities of milk treated separately, the following experiment was undertaken.

Eight churns labelled with the names of the following breeds: Shorthorn, Lincolnshire Red Shorthorn, Holstein, Red Poll, Ayrshire, Dexter, Jersey and Guernsey, were set aside, and as the milk was brought to the dairy from the cows in the yard it was poured into its special churn. When the milk had all been brought in, 30 lb. were taken from each lot to arrive at the amount of butter obtainable from that quantity, and subsequently 15 lb. were taken from the milk of each of the first six breeds to mix with a similar quantity of Jersey and Guernsey milk respectively.

Unfortunately, there was not sufficient Guernsey milk available to mix with the Ayrshire and Dexter milks, so that the experiment with these milks was confined to Jersey milk only.

The milks were taken with great care, a plunger being used during that part of the process, and to ensure accuracy only one milk was dealt with at one time, the whole of the quantities from one breed being finished before commencing with the next. The two Channel Island milks were first divided, as the cream rises quicker in them than in the other milks selected.

The various lots were separated immediately after they had been mixed, every precaution being taken to see that the temperature of the milk and the speed of the separator were similar in each case. Churning took place after twenty-four hours.

The following table gives the weight of butter obtained from each lot of 30 lb. of milk, the last column showing half the quantity so as to estimate the amount obtainable from 15 lb. of milk :—

TABLE I.

Breed	Weight of Milk	Weight of Butter	Weight of Butter (divided by 2) as if from 15 lb.	
			Lb.	oz.
Shorthorn	30	0 13½	0	6½
Lincolnshire Red Shorthorn	30	0 15½	0	7½
Holstein	30	0 12½	0	6½
Red Poll	30	0 13½	0	6½
Ayrshire	30	1 1½	0	8½
Dexter	30	0 15½	0	7½
Jersey	30	1 7	0	11½
Guernsey	30	1 4½	0	10½

The next table gives the results of the chunnings of the mixed milks.

TABLE II.

Breed		Weight of Milk	Weight of Butter
		Lb	Lb or
Shorthorn and Jersey	15 lb of each	30	1 2
Shorthorn and Guernsey,	"	30	1 1½
Lincoln Red Shorthorn and Jersey,	"	30	1 2
Lincoln Red Shorthorn and Guernsey,	"	30	1 1½
Holstein and Jersey,	"	30	1 2½
Holstein and Guernsey,	"	30	1 0½
Red Poll and Jersey,	"	30	1 2½
Red Poll and Guernsey	"	30	1 1½
Ayrshire and Jersey,	"	30	1 4½
Dexter and Jersey,	"	30	1 1

The next table shows the differences between the weights of butter churned from the mixed milks and the amounts calculated from the addition of the half-weights shown against each lot of butter in Table I.

TABLE III.

Breed	Calculated weight of butter from 15 lb of milk						Weight of butter from mixed milk	Differences in favour of mixed milk
	Lb	oz	Lb	oz	Total		Lb or	Oz
Shorthorn and Jersey	0	6½	+ 0	11½	= 1	2½	1 2	- ½
Lincoln Red Shorthorn and Jersey	0	7½	+ 0	11½	= 1	3½	1 2	- 1½
Holstein and Jersey	0	6½	+ 0	11½	= 1	1½	1 2½	+ ½
Red Poll and Jersey	0	6½	+ 0	11½	= 1	2½	1 2½	+ ½
Ayrshire and Jersey	0	6½	+ 0	11½	= 1	4½	1 4½	+ ½
Dexter and Jersey	0	7½	+ 0	11½	= 1	3½	1 4	+ ½
Shorthorn and Guernsey	0	6½	+ 0	10½	= 1	0½	1 1½	+ ½
Lincoln Red Shorthorn and Guernsey	0	7½	+ 0	10½	= 1	1½	1 1½	- ½
Holstein and Guernsey	0	6½	+ 0	10½	= 1	0½	1 0½	- ½
Red Poll and Guernsey	0	6½	+ 0	10½	= 1	1½	1 1½	+ ½

From these figures it will be seen that the differences are small, and may easily be accounted for by the amount of moisture left in the butter. It is difficult to get various lots of butter all dried to the same extent, particularly when, as in this experiment, the working and making-up had to be done by different dairymaids, there being twenty lots of creams to be churned and dealt with. If the experiment is repeated, the

buttermilks might be analysed and the butter tested for moisture, for although the buttermilks showed no trace of cream, and the butters were all apparently as well made as possible, the analyst can discover what the eye cannot.

The conclusion drawn from the experiment appears to be that when the dairy work is done carefully there is no advantage in point of weight of butter in mixing milks showing a large percentage of fat with those of poorer quality. On the other hand, however, the butter made from the mixed milks of the first six breeds were better both in appearance and quality than those made from the unmixed milks of those breeds.

IV.—EXPERIMENT IN CHURNING.

Four churns of milk from the Shorthorn, Holstein, Jersey, and Dexter breeds were set aside, and from them four lots of milk, two gallons each, were taken, the process being similar to that described in the previous experiment.

No. 1 lot was scalded, the other three lots being separated, the creams being kept distinct. No. 2 cream was churned sweet within three hours of being separated. No. 3 was kept twenty-four hours, and then churned. No. 4 was ripened with a starter, and churned after twenty-four hours. The buttermilks were not churned, as the experiment was intended to show the differences in weight of butter from one churning only—few taking the trouble to churn buttermilks.

The results are given in the following table:—

Breed	Scalded cream	Sweet cream	Ripened naturally	Ripened with starter
	Lb oz	Lb oz	Lb oz	Lb oz
Shorthorn . .	0 7½	0 5	0 8½	0 9½
Holstein . .	0 7½	0 5½	0 8½	0 9½
Jersey . .	0 12½	0 11½	0 12½	0 15½
Dexter . .	0 8	0 9	0 11	0 10½

This experiment would bear repetition, in which case I would suggest (a) that the buttermilks should be either analysed or re-churned, and (b) that the cream ripened naturally should be kept forty-eight hours, instead of twenty-four, to put it on the same level as that ripened with a starter.

V.—CAERPHILLY CHEESE.

As these cheeses are produced in large quantities in the counties of Monmouth, Gloucester, Somerset, and Wilts., it was considered that an experiment in making them from various qualities of milk might not be out of place.

The milks selected were those of the Shorthorn, Jersey, and Guernsey breeds, and the following cheeses were made—One from each of the whole milks of the three breeds, one from the equal quantities of Shorthorn and Jersey milk, one from the equal quantities of Shorthorn and Guernsey milk, and one from two-thirds whole and one-third separated Shorthorn milk. The following is the report of Miss Noble, Dairy Instructress to the Staffordshire County Council, who carried out the experiment.

“The process of making was the same for each cheese, but owing to changes in weather from day to day and the fact that the cheeses were made in the open dairy, it was difficult at times to maintain the required temperature, which consequently caused a considerable loss of fat through the curd becoming chilled.

“This accounts for the difference in weight of the Shorthorn-Jersey mixed milk cheese, the temperatures in the making of this cheese having fallen considerably lower than in the making of the other cheeses.

“The weight of curd for each cheese was taken, and the cheeses were examined at the end of six weeks, and again at the end of three months.

“At six weeks the Shorthorn and mixture of Shorthorn cheeses were the best in quality, the Jersey and Guernsey not having fully matured. The separated milk cheese was very poor in quality, being dry, hard, and brittle.

“At the end of three months the Jersey and Guernsey had greatly improved, excelling in quality the other cheeses.

“The Shorthorn and Jersey, and the Shorthorn and Guernsey mixed milk cheeses had also matured, but the Shorthorn whole milk cheese was not so good, and had developed a bitter flavour. It also showed signs of becoming blue veined.

“The Shorthorn whole and separated mixed milk cheese showed a marked improvement in quality, though poor as compared with the other cheeses. This cheese also showed signs of blue vein.

“It might here be stated that the Shorthorn milk for the making of the Shorthorn, and Shorthorn and Jersey mixed milk cheeses was evidently tainted when received, which will account for the poor flavour of these particular cheeses. I consider that the cheese made from Jersey milk is the best cheese, the Guernsey coming next; this latter not being quite so good in quality as the Jersey, and too deep in colour. The Shorthorn and Guernsey mixed milk cheese comes third, the keeping qualities of these three cheeses being very good.

“The cheese made with separated milk is decidedly inferior to the other five cheeses.”

The following table gives full details of the experiment —

Breed	Jersey	Guernsey	Shorthorn	Shorthorn and Jersey	Shorthorn and Guernsey	Shorthorn and separated milk
Weight of milk	8 gall	8 gall	8 gall	8 gall	8 gall	8 gall
Weight of curd	14 lb	13 lb 13 oz	14 lb 13 oz	12 lb	11 lb 4 oz	12 lb
Condition of curd when vatted	Medium dryness, normal	Medium dryness, normal	Normal but very wet	Very dry temp ture too low	Very dry but normal	Dry and brittle normal
Weight of cheese	7 lb 3 oz	7 lb 5 oz	6 lb 9 oz	5 lb 10 oz	6 lb 9 oz	5 lb 13 oz
Quality	Excellent	Excellent	Good	Excellent	Very good	Very poor
Flavour	Excellent	Very good	Poor	Poor bitter	Good	Fair
Colour	Fair	Poor	Excellent	Good	Poor	Very good
Keeping qualities	Excellent	Excellent	Good	Very good	Very good	Good
Remarks	Colour not typical of Caer philly	Too yellow in colour	Blue veined milk tainted	Tinted, milk	Too high coloured	Blue veined
Loss in weight during the 3 months	6 lb 13 oz	6 lb 7 oz	8 lb 3 oz	6 lb 6 oz	4 lb 11 oz	6 lb 3 oz

E. NOBLE.

The result of the experiment seems to show that cheeses made from milks rich in fat are superior in quality. This has been previously demonstrated at the Royal and elsewhere.

The work in the dairy was exceptionally heavy at Bristol, owing to the large number of cows in milk in the yard, and the increased entries in the butter-making competitions; and I must express my gratitude to the willing help given by the two Assistant Stewards (Messrs. Alan Gibson and Frederick Byng-Stephens), Mr. Hasted (the Dairy Clerk), Miss Kirke, the ten dairy assistants, and the whole of the staff.

ERNEST MATHEWS.

Little Shardloes,
Amersham

AGRICULTURAL EDUCATION EXHIBITION, BRISTOL, 1913.

THE Education Exhibition of 1913, which Sir J. B. Bowen-Jones, Bart., had under his direction, was well up to the customary standard of excellence, and presented several features of special interest. All the exhibits were in one building, or its annexes, which was a distinct improvement on the arrangement at Doncaster the previous year, when the principal entry was housed in a special pavilion at some little distance from the main building.

Three only of the Agricultural Colleges were represented, but the Rothamsted Experimental Station sent an exhibit which attracted much attention, and the Meteorological Office made a first appearance in this section of the Society's Show-yard with an exceedingly interesting collection of instruments, charts, and records. Now that some considerable amount of attention is being devoted to the re-establishment of village industries in various places, it was interesting to see the exhibit of the Stonehenge Woollen Industry, though some may doubt how far the development of such enterprises are economically possible. The nature-study stalls once more occupied a very considerable share of the available space, and attracted a certain section of the visitors in large numbers.

The Royal Agricultural Society of England. Woburn Experimental Station.—The Royal Agricultural Society was represented in this part of the Show by the Woburn Experimental Station, and it was noticeable that a number of the visitors to this bay were unacquainted with the fact that Woburn is directly under the control and management of the Society. The farm contributed some interesting specimens, taken from field plots, to show the changes that are possible by judicious manuring of grass land, not only in the herbage but also in the turf. Applications of farmyard manure have given the heaviest yields of hay, but the quality of the grass was very coarse, and the condition of the turf not at all satisfactory. These unfavourable conditions were removed on the lime plot, and when followed with a dressing of superphosphate and sulphate of potash gave a beautiful turf, the herbage consisting of the finer grasses and white clover. Basic slag and sulphate of potash also produced a nice turf, but not noticeably better than superphosphate and sulphate of potash.

These experiments illustrate what can be done by any practical farmer, as the field where the work is carried out

continues under the ordinary course of treatment, such as haying or grazing as circumstances warrant. There was also to be seen in this bay a most useful method of keeping crop records, by means of which the previous cropping of any portion of the farm can be ascertained at a moment's notice. Portions of soil taken from the field trials at Ware showed to interested visitors the result of some years work on the extermination of the wild onion. It has been known for some time that certain chemicals would kill the bulbs growing in the top layer of soil, but the bulb is also found growing some three or four inches down. By better drainage of the soil, and by the inclusion of deep-rooting grasses in the grass mixture, much can be done to eradicate this weed, for no trace of it could be found in the specimen shown. This is without doubt an important piece of work, and it is to be hoped that it may be brought to the notice of all farmers of strong land.

Another interesting exhibit dealt with the question of how long can we go on spraying our crops with solutions of sulphate of copper before the accumulations begin to show the toxic effect that copper salts are known to have on vegetation. Wheat was shown growing in pots, to the soil in which successive and increasing quantities of copper sulphate had been added, and it was not till amounts had been used equal to .05 per cent. of copper that any poisonous action was noticed, whilst judging from the appearance of the plants a matter of .01 per cent. copper seemed to be stimulative rather than toxic in its action. If 10 cwt. of bluestone were used to an acre there would be .01 per cent. of copper in the soil, assuming that it would be affected to a depth of 9 in., and when it is remembered that a spraying mixture for charlock for instance is 40 gallons of $\frac{1}{4}$ per cent. solution per acre, it is obvious that there is little to fear from copper poisoning of plants.

Further work illustrating the effect of lime and magnesia on the wheat plant was shown; in one case lime was added to a soil that was known to contain a considerable amount of magnesia, and in the other magnesium oxide had been mixed with the soil. The results were very marked, and not the least remarkable part of the experiment was the influence exerted on the type of grain grown. Diagrams and pictures together with samples of corn and roots completed the exhibit, and in a second bay the publications of the Society were obtainable, as well as diagrams of various insect pests, whilst there was also a fine set of prints showing the different stages in the life of the wheat plant.

Rothamsted Experimental Station.—This station sent an interesting collection of water cultures, showing the effect of foods and poisons on plants. Manganese, zinc, copper and

arsenic in amounts varying between 0 to 2,000 parts in ten million of solution were used. Manganese sulphate in the larger amounts appears to be poisonous, but in the lower proportions beneficial. Zinc sulphate and copper sulphate do not appear to have any beneficial result even when used in the smallest quantities. There was also a nice collection of weed plants in specimen glasses showing the root growth of each. Another striking feature of this exhibit was a set of miniature hay stacks representing the proportion of true grasses, leguminous plants and weed growths that have been produced on the well-known grass plots that form such a distinctive feature of the Rothamsted Station. The two stacks showing the absence of leguminous growth as well as the excessive coarseness of the grasses from the use of ammonium salts were specially noteworthy, and well impressed the lesson they were intended to teach. The question of the partial sterilisation of "sick" soil by heating and by the application of different chemicals was shown by tomato plants growing under different conditions of treatment in large pots of soil, and the effects on the foliage were most noticeable.

There were some remarkable specimens of barley growing in large earthenware pots, illustrating the effect of lime and chalk on the ammonia and nitric acid in different types of soil, and results were further exemplified by a series of diagrams explaining how the amount of both ammonia and nitric acid had varied with the amounts of the applications. .1, .2, .3, .4, and 1 per cent. had been added to the soil before planting the seed, and it was apparent how detrimental had been the action of 1 per cent. caustic lime on the barley plants' growth; half this amount, .5 per cent., was quite of a beneficial character, and when 1 per cent. of ground chalk was made to take the place of 1 per cent. caustic lime, the resulting plants were decidedly better than the control pot where neither lime or chalk had been used. The exhibit further showed that very considerable differences occur with different types of soil, but there did not appear to be any regulating factor determining why such differences should be. This exhibit gave much matter for thought and consideration, and we would venture to suggest that it would be of the utmost value to visitors if the Station could arrange another year to have some one in charge during the whole time of the Show.

South Eastern Agricultural College, Wye, Kent.—This exhibit included a very attractive display illustrative of apple-boxing. The College has done much pioneer work in this direction with very satisfactory results, and careful grading and packing are beginning to revolutionise the English apple trade. Some boxes were shown of fruit packed in paper, and

though the appearance is less attractive the practice is on the increase, as it necessitates less careful grading.

Some valuable information was obtainable at this stand on diseases caused by fungi. Gooseberry mildew was shown in both the summer and winter stages, and further evidence was to be seen of the excellent results arising from the use of lime-sulphur wash.

Another striking exhibit was a specimen of "black scab" in apple and pear trees. Crown-gall in Lucerne (*Urophycles Alfalfæ*) has only so far been found in Kent, but is a disease that is spreading and requires watching. Celery blight, another subject that has been studied at Wye, is found on the leaf in May, and a careful microscopical examination of the seed will sometimes reveal the presence of the fungus. Bordeaux mixture has been found to give complete protection. The College made its usual excellent display of live insects in jars, and there was also a series of photographs representing fruit production in Kent.

Royal Agricultural College, Cirencester.—Practically the whole of this exhibit was devoted to a collection of wools from pure and cross-bred sheep such as Shetland, Shetland crosses, Manx and Manx crosses, many of which were exhibited in another part of the Showyard by Mr. H. J. Elwes, F.R.S. They represent the primitive British breeds not met with at Agricultural shows, which still persist in out-of-the-way places, and from which some of our modern improved breeds have been developed. The quality of the wool was undeniable, but the ordinary man may not readily be convinced of the advantages to be got by substituting any of these breeds, or their crosses, for his own improved stock.

The Agricultural and Horticultural Research Station, Long Ashton, Bristol.—The interesting work now being carried on by this Station was well illustrated by its exhibit. There was a large display of ciders and perries, both from single varieties and from mixed fruit, and a series of bottles containing "sick" cider illustrated the production of this peculiar disease, the life-history and treatment of which is now known. Cultures of the pear-blossom bacillus, first isolated in this laboratory, were shown, together with specimens of artificially and naturally caused attacks on pear-blossom. This disease causes the fruit to drop off at the time of setting, which until recently has always been attributed to frost. A model cider-press was also on view, together with specimens illustrating the diseases of fruit trees due to insect and fungoid pests, the propagation and pruning of fruit trees, &c. The exhibit attracted very considerable attention from the public.

University College, Reading. Dairy Research Department.—Dr. Williams had prepared for this exhibit some interesting and instructive tables in regard to tuberculosis of animals, it being estimated that the average annual loss to the country on tuberculous stock is nearly 300,000*l*. Another table showed the variations that had been found where the tuberculin test had been applied under improper conditions, and it was sought to impress on visitors how absolutely necessary it was to have the test, if done at all, performed under proper conditions. Examples of milk free from organisms without any sterilising process were shown, having been drawn direct from the cow into a flask; they were still quite sweet after the lapse of some days.

Meteorological Office, South Kensington.—This was the first time the Meteorological Office had contributed an exhibit, and an interesting collection of apparatus and diagrams had been got together. Various patterns of self-recording and other instruments were on view, many of them being at work, and the walls of the bay were covered with photographs and diagrams, some illustrating the monthly records of the rain distribution, and others giving the rainfall for London over a period of 100 years. An interesting table showed how forecasts are prepared, and an exceedingly valuable table was that showing how the rainfall of the autumn influenced the yield of the wheat crop the following year, whilst a separate sheet gave the information for the eastern counties only. The usual demonstration that has been given previously in the railed-off enclosure adjoining the educational pavilion was not given this year, but charts showing the observations that had been made on the Showground each day were posted up for the use of the public, together with the special daily forecast that was sent from the Meteorological Office.

Agricultural Education Association.—Literature from all Colleges and Experimental Stations throughout the country was collected as in previous years at this bay, showing the work done at some twenty-two centres. Experience has shown this to be one of the best ways of bringing before the public the work of the different teaching and experimental stations. The many enquiries for information from interested persons shows the value of this stall.

Stonehenge Woollen Industry, Lake, near Salisbury.—An interesting exhibit of different patterns of cloth made by the women and girls of the district. The wool is spun in the cottages and woven in the village room. Hampshire Down wool from Salisbury Plain is largely used, and dyes are avoided whenever possible, a great variety of patterns being obtainable with combinations of natural black, grey, and white fleeces.

This is an attempt to revive an old cottage industry which everyone will regard with sympathy.

Home-Grown Tobacco Competition.—Tobacco was exhibited for the first time at the Doncaster Show last year, and this year a much larger exhibit and competition was arranged by the British Tobacco Growers' Society. The competition filled very well and the development in this new industry, not only in Ireland, but also in England, Scotland, and Wales, is very striking. Every stage in the production of the manufactured article was illustrated by specimens on the various stands, and cigarette and pipe tobacco made from British leaf was to be seen in the exhibits of Lord Dunraven, Sir Nugent Everard, and Mr. A. J. Brandon. In the competition it was noteworthy that the tobacco from the poor sand of Norfolk excelled that grown in Ireland. The development of this crop in the British Isles will be watched with interest, for it may have a great future, and it is a point very much in its favour that its cultivation would displace no other crop, whilst it might also be the means of the reclamation of some of our poorest uncultivated sands. The exhibit was crowded throughout the week.

Nature Study and Rural Education. County Councils Association.—This exhibit grows in size and in popularity every year, and the question of providing special accommodation for it may shortly have to be considered by the Society. The work done by the boys and girls in the counties of Dorset, Gloucester, Somerset and Worcester was of a very high standard, and it was distinctly noticeable that the greater number of the exhibits had a more direct bearing on agriculture and rural economy than in some previous years. The work of the girls in "Home-making" will add greatly to the health and comfort of coming generations of farm-labourers and is capable of much development in many areas.

FORESTRY EXHIBITION AT BRISTOL, 1913.

THIS Exhibition was again held in conjunction with the Royal English Arboricultural Society, and the stewards of the section were Mr. George Marshall and Mr. Coltman Rogers. As in former years the more tender exhibits were staged within the shed devoted to the section, and the more hardy sorts were placed outside adjoining the shed.

There were two main divisions of exhibits, viz., Competitive Classes for Medals and Classes for Exhibition. In the latter class, however, the judges are empowered to award medals to deserving exhibits. In both classes there were 180 entries.

There was rather a large competition in the classes devoted to gates and wickets, which formed quite an interesting exhibit.

The all-important question of Fencing was embraced in Classes 9 and 10, the former being devoted to fencing from home-grown timber, wherein a very large latitude of design was encouraged, and the latter to fencing, more especially creosoted fencing, from foreign timber. In Class 9, Sir George Cooper, Bart., was awarded silver medal, and in Class 10 Messrs. Armstrong, Addison & Co., Sunderland, silver medal, and Messrs. English Bros., Ltd., Wisbech, bronze medal.

Class 11 is a very important section, inasmuch as it tries to demonstrate sylvicultural principles together with economic problems, by exhibiting "specimens showing quality of any timber grown on different soils and situations, and the respective ages at which it reaches marketable size and maturity, accompanied by a short descriptive statement." In this section Earl Beauchamp was awarded silver medal.

This exhibit would be rendered more educational if, say, fuller detailed statements were given as regards the full crop of which the individual trees exhibited are examples, inasmuch as the exhibit would then be a guide to a correct period of rotation, or otherwise demonstrate that the period of profitable rotation must be treated on the merits of the particular case accruing from such factors as soil, situation, &c. In view of the fact that we have few working plans on estates, information of this kind would be valuable, more especially to owners within the show area.

Class 12 solicited "Specimens of *Stems*, and *Boards* cut from them not exceeding 6 ft. in length, illustrating the effects of dense and thin crops in branch suppression and quality of timber." Earl Beauchamp was awarded silver medal.

This is a very important exhibit, inasmuch as it demonstrates the value of density in the younger stages of the crop. But something should be further devised to demonstrate the value of density according to species, having regard to the initial cost of planting. For example, in the case of a pure crop of Scots Pine planted at 3 ft. apart a great number soon fall behind in the struggle for existence, and so at twenty years of age, following good management, we get a very good numerical strength asserting themselves as the "survival of the fittest." The nature of a pure crop of Scots Pine is that the individual trees do *not* grow equally in height in the younger stages, and so the subsequent strong ones are improved in type—in fact a correct type—as the result of the struggle. On the other hand a pure crop of Spruce planted at 3 ft. apart (being generally considered too close for this species) would at twenty years of age present a crop of weakling poles, all equally weak, as the result of too

even a struggle, being the nature of this species, or as it were the individual trees show a decided tendency to run too long at a "dead heat." Hence the practical point to demonstrate is that various species as crops should be planted at varying distances apart, showing as far as possible in the first twenty or thirty years of the rotation, the correct number of stems per acre, together with the correct type of individual tree.

In Class 13, "Nurserymen's Competition, for the best exhibit of Specimen and Ornamental Trees," Messrs. Dicksons, Ltd., Chester, were awarded silver medal.

In the Classes for Exhibition, the Duke of Wellington, Strathfieldsaye, Mortimer, was awarded a silver medal for a general collection, comprising seedling trees, seeds and cones of trees, examples of damage done by squirrels, &c. For a similar general collection Earl Stanhope, Chevening, Sevenoaks, was awarded a bronze medal. Dame Smyth, Ashton Court, and Commissioners of Woods and Forests—Dean Forest—were awarded a "highly commended." In regard to the latter exhibit, though not wishful to be invidious, it is only just to say that the forester, Mr. Hugh Reid, showed some very good exhibits in forest entomology, and also some interesting points in fungi. As regards the latter, Mr. Reid has since furnished the following note regarding *Rhizina undulata*: "This fungus has caused considerable damage after coniferous woods have been felled and replanted. The fungus confines itself to the coniferous trees, and as far as my observations go broad-leaved species appear to be immune. Thus the remedy appears to be in replanting with broad-leaved species only. The plan which I have tried in allowing a twelve months' rest after felling has not been attended with much success. After two years' rest, however, when grass and weeds have grown, a steady disappearance of the fungus follows. Hence it is probable that the fungus exists on the raw humus layer. My experience applies only to soils resting on carboniferous limestone."

The Royal Agricultural College, Cirencester, had a very good exhibit for educational purposes, and special mention might be made of the method of storing several specimens of timbers after the manner of a library of books. A silver medal was awarded for this exhibit.

Of the miscellaneous exhibits, mention may be made of a special machine for winding lacing wire by Mr. Thomas Armstrong, Eden Hall Estate, Langwathby, for which the Judges awarded a "commended."

Messrs. Richardson & Son, 15, Barn Mill, Stamford, sent some excellent photographs of large oaks—"denizens of the old forests"—which did much in adding to the artistic side of the Exhibition. Other photographs were sent by Messrs.

Trewhella Bros., Ltd, Birmingham, showing method of uprooting trees.

The Royal Society for the Protection of Birds, and the Selborne Society, both exhibited nesting boxes for the encouragement of the more useful birds, and the former added food wells and food tables. This class of exhibits is a very commendable one, inasmuch as it suggests the association of ornithology and forestry questions.

Messrs. Fisher, Son & Sibray, Ltd., Sheffield, presented a most excellent stand of forestry tools, for which a silver medal was awarded

The gold medal offered by the Royal Agricultural Society for the best general collection of exhibits in Classes 1-22 was awarded to Earl Beauchamp. To the one who carries off a gold medal congratulations may be deservedly offered, but in this case they are doubly deserved as it is the second time Earl Beauchamp has been awarded the gold medal. His Lordship was awarded the same honour at Liverpool three years ago, and much credit is due to Mr. Slater, the forester, for his very enthusiastic labours and for the very fine manner in which he displayed his exhibits.

Now that this most excellent Exhibition of Forestry has been in existence for several years and has received such hearty support from so many landowners, together with much labour from estate agents and foresters, it becomes a question how far the exhibition may be improved in order to present the most salient educational features and demonstrate the more important principles in forestry

It is practically obvious that forestry exhibits differ from agricultural exhibits, inasmuch as the latter can be entirely produced in a season or two, whereas in the former it takes a comparatively long time to produce a crop of timber. Thus forestry exhibits must be of a varied nature, viz : (1) examples of the crop produced ; (2) the methods adopted to produce it ; (3) the scientific principles associated with the production ; and (4) the encouragement of planted plots to demonstrate the principles of correct silviculture. The question therefore arises how is this to be done, and at the same time improve, if possible, the exhibition as a whole ? A few points must be borne in mind, viz. : (a) the full encouragement of exhibits within the show area ; (b) the exhibition from specialists (perhaps yearly repetition), having regard to fresh visitors ; and (c) exhibitions from colleges of an educational character, but not in competition with private collectors.

The above are only suggestions, but as it requires a considerable time to arrange for an exhibition it is essential to invite an early response, tabulate the "acceptances," and then

allocate the work in such a manner as would embrace the enthusiasm or predilection of the individual exhibitor, and prevent, as far as possible, overlapping or repetition, but at the same time focus on the aggregate result.

A. T. GILLANDERS.

Park Cottage,
Alnwick

REPORT OF JUDGES ON PLANTATIONS AND HOME NURSERIES COMPETITION, 1913.

THE counties of Monmouthshire, Somerset, Devon and Cornwall were those included in the annual Plantation Competition in connection with the Royal Agricultural Show at Bristol.

Although these four counties are particularly rich in well-timbered estates, and although the production of coniferous and other timber is of more importance to them than possibly any other four counties in England, the entries were somewhat disappointing. They included: Monmouthshire eleven, Somerset fourteen, Devon two, Cornwall none. Any deficiency in quantity, however, was made up in quality, and in several of the classes it would be difficult to find more interesting examples of forestry.

Since a full detailed report of the entries appeared in the October issue of *The Journal of Forestry*, it is intended here to speak more in general terms and to refer to several points that apply to all competitions, and also emphasise certain errors which are so general in this country.

We might first place on record the great good which these competitions are doing to create interest in forestry and the improvement of woods, and a healthy rivalry between the different estates. They also lead to discussions on important points and help the solution of pressing problems relating to forestry in this country.

The same rule applies to these as to all other competitions that the best men take the lead and enter their woods, and, though they may have suffered from special handicaps, or even made mistakes, they are not ashamed of risking criticism or adverse awards. The motto applicable to these competitions is that it is better to have competed and lost than not to have competed at all; and it is a pity that others, who have often quite good things to enter, should betray so much hesitation in doing so. As in other crops, the best crop of trees does not

necessarily reflect the greatest credit on the management, and, when special difficulties relating to soil, situation, pests, &c., have to be overcome, the final result is often more creditable to those who have had to tackle these problems than in cases where all the conditions were specially favourable.

It is to be hoped that in future more entries will be obtained from those who are attempting to apply "systematic management of a woodland area, including the renovation and conversion of an unprofitable wood into a profitable condition."

Rather than confining ourselves to unlimited praise, it is better in a report to point to mistakes, so that these can be prevented in future. Previous reports have dwelt on common mistakes which are made in planting, and it is the more important again to emphasise them since these are so general, but it must not be thought that they apply particularly to the entries in this competition. The most common mistake is that of planting Scots pine without sufficient consideration for the ultimate result and the effect on the remainder of the crop. Scots pine has been called the "last resort of the forester," and it seems to justify this reputation. We hear frequent warnings against planting trees which are called "exotics," and certainly caution is necessary with a tree that has not been sufficiently tested. As far as England is concerned, however, it is doubtful if in the future we shall lose as much money or obtain such poor results from so-called "exotics" as we have done in the past by planting Scots pine in all kinds of unsuitable mixtures, on all sorts of soils (many of which would produce far more valuable trees), and the ultimate result being to produce knotty and inferior timber. The value of the timber of Scots pine—especially that grown in England—must, in any case, in the future be poor in comparison with such timber as ash, Spanish chestnut, and other of our hardwoods, which deserve far more attention than they receive.

Another common mistake—also referred to by previous Judges—is that of attempting to produce oak by planting the trees at 12 ft. or more apart, and filling in with so-called nurses. Unless these mixtures receive constant attention and supervision the "nurse" often consumes the "child"; but, apart from this, there are other obvious objections. In the production of oak the survival of the fittest is most important, and the difference in vigour and character of oak saplings can be seen wherever there is a crop to inspect. When planted at a large distance apart almost each individual tree has to be relied on for the final crop, and this is most unwise with a tree where considerable selection is so necessary.

The origin of this mistake probably lies in imagining that all trees should be treated alike. Larch, for instance, lends

itself to wider planting than Scots pine, oak or beech. All trees require different treatment, and their respective requirements should be studied, whereas the want of proper attention to this point is responsible for such incorrect mixtures as larch, Scots, and oak. This latter is quite a common mixture and the result is to produce inferior timber of all three, and, since there is no shade-bearer present to preserve the fertility of the soil, both the crop and the land must necessarily suffer.

It seems advisable to emphasise the importance of a proper and definite policy when planting, and to give careful consideration to all the necessary points. After deciding on the trees most suitable to the soil, aspect, and general conditions, and how far these should be planted pure or mixed, the most important point for careful consideration is the local or other markets which can be cultivated, so as to ensure a proper demand either for the thinnings or for the mature timber. Other points for consideration are questions of an early return, the requirements of game, shelter, &c., and taking precautions as to damage by insects, fungi, voles, rabbits, &c. If possible, it is an advantage to be able to realise the crop at any reasonable age.

It might appear superfluous to refer to the individual requirements of the trees and to the important difference between the light-demanders and shade-bearers. When, however, one sees the mixtures advocated by nurserymen and others, no apology is needed for emphasising this point, and it cannot be too often impressed on planters that mixtures should be simple and limited to as few species as possible.

A common mistake, illustrated in some of the entries, was that of leaving a few single standards of oak, &c., after the wood had been practically clear-felled preparatory to replanting with conifers. Although it might appear a pity to fell promising-looking saplings, the result, when these were isolated and exposed to the sun and gales (from which they had received protection in their early years), is invariably the production of epicormic branches, with consequent stagheadedness and a generally forlorn appearance. However promising these trees may have appeared, it is usually far better entirely to clear-fell and replant.

The majority of the entries were far more free from these mistakes than is usual and several were of especial merit. There were instances of original and creditable experiments showing considerable forethought and consideration, and we noticed with pleasure that, in place of relying on the few varieties which had been planted on the estate in the past, small groups of other trees had been inserted as an experimental planting for future guidance. When we remember the

specimens of such trees as Douglas fir and others, which now serve as a guide of great value to the estate for future planting, such experiments are to be commended for their originality and forethought.

Another point which we were glad to note was the planting of pure species in certain cases where they were likely to succeed, rather than the promiscuous mixture of trees which is often planted, on the excuse that if one does not thrive the other may, and which usually results in the production of inferior timber of each variety.

We were also glad to note that in many instances special attention had been given to the markets for which the timber was to be produced, and alternatives had been considered should the rotation be altered.

We were struck with the general healthiness of the majority of the entries, and especially the absence of any serious damage by insect pests or fungi. Even the common larch disease, with one or two exceptions, was not at all conspicuous, and insect pests were also refreshingly absent. Wherever insect pests required to be dealt with, proper attention had been given to the subject.

The worst pest in the hardwoods was the Ash Bud Moth (*Prays curtisella*) and on one estate this was doing considerable damage. *Argyresthia lævigatella* was common on the Larch, and in one case, in the hope of checking it, the side-shoots were being removed, but it was doubtful if this was justified.

It would be difficult, in any competition, to find a more interesting estate than Dunster Castle, with the plantations planted by the late G. F. Luttrell, Esq. It is doubtful whether there is any estate in England which reflects more credit on the person who planted the timber, and shows more careful thought, consideration and study, than this Somerset estate. With scarcely any guide as to which trees would be most suitable to plant in face of the special and exceptional difficulties from poverty of soil, animals and other pests, gales, &c., several of these plantations are now of considerable age; and, in spite of the increased knowledge and experience which have since been acquired, it would be a bold man who would suggest that he could have done better, or could even now point to many mistakes.

Ashton Court, Lady Smyth's estate near Bristol, and the Trelleck Grange estate of Mr. Crompton Roberts, Monmouthshire, were also worthy of note.

Since there are so many good estates in South Devon, and, in Cornwall, where forestry is important and where it has been developed to a considerable pitch of perfection, it was disappointing that entries had not been more general from

these districts. The Bath and West Show at Truro, provisional valuations, and other pressing problems engaging landowners' and land agents' attention, were doubtless responsible to some extent, but this only reflects greater credit on those who did compete.

A full list of the awards will be found in the Appendix.

M. C DUCHESNE

H. A PRITCHARD

THE FARM PRIZE COMPETITIONS

THE farm prize competitions in connection with the Bristol Meeting in 1913 covered a wide area, including as they did the three shires of Gloucester, Somerset and Dorset. Within the boundaries of these counties may be found almost every type of soil, climate, and of farming, from the calcareous soils of the Cotswolds and the Dorset Downs, with their large sheep population and characteristic arable farming down into the Cheddar valley and the rich dairying districts of Somerset. It is thirty-five years since the Society visited Bristol, and the year 1878 may be said almost to mark the beginning of the great period of depression which culminated in the early nineties, and from which we have only begun to recover during the past few years. In 1877 the average price of wheat was 56s. 9d., but in the year following it had dropped more than 10s., and thereafter the tendency was almost always to lower levels until bottom was touched in the year 1894 with the price at 22s. 10d. It is not necessary here to refer to the causes of this fall, indeed they are generally known, but it may be of interest to examine the changes in the agricultural population and in the crops and livestock on the land during that period as revealed by the agricultural and the census returns in the three counties covered by the competition.

Briefly examining the accompanying returns (supplied by the kindness of Mr. R. H. Rew, C.B., of the Board of Agriculture and Fisheries), it appears that in Gloucestershire about 81 per cent. of the total area of land and water is farmed at the present day; whilst in Somerset and in Dorset the proportions are 82 per cent. and 76 per cent. respectively. The area under cultivation has declined during the period 1878-1912 in Gloucester by some 32 per cent., in Somerset 38 per cent., and in Dorset by 28 per cent. As the total farming area shows practically no variation in the three counties it follows that the whole of the land gone out of cultivation has been laid down to permanent grass. Coming to

Farm Prize Competition, 1913.

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Acreage under Crops and Grass in Gloucester, Somerset, and Dorset, in 1912 and 1878.

	Gloucester			Somerset			Dorset		
	1912	1878	Changes shown	1912	1878	Changes shown	1912	1878	Changes shown
Arable Land	Acres 323,053	Acres 341,789	-108,716	Acres 172,416	Acres 232,735	-110,319	Acres 187,032	Acres 233,385	- 66,783
Permanent Grass	322,078	307,026	+15,052	678,056	568,556	+110,579	809,881	249,883	+ 56,978
All Farm Land	654,131	648,795	+ 5,336	850,451	849,091	+ 1,360	476,943	483,748	- 6,805
Rough Grazings	8,917	(¹)	—	58,987	(¹)	—	28,115	(¹)	—
Woodlands	61,184	(²)	—	46,788	(²)	—	38,869	(²)	—
Corn Crops:—									
Wheat	47,680	90,565	- 42,885	29,807	72,775	- 42,968	19,742	43,807	- 23,865
Barley	23,662	42,132	- 18,470	18,618	32,408	- 13,492	20,742	38,652	- 17,910
Oats	34,449	18,009	+ 16,440	30,734	22,174	+ 8,550	34,130	21,520	+ 12,610
Rye	481	285	+ 196	428	438	- 142	1,249	956	+ 293
Beans	7,849	14,816	- 6,967	7,184	11,824	- 4,640	1,148	2,814	- 1,666
Peas	1,984	8,708	- 4,724	723	2,705	- 1,982	529	3,592	- 2,863
All Corn Crops	116,105	172,515	- 56,410	87,782	142,316	- 54,534	77,540	110,441	- 32,901
Root and Green Crops:—									
Potatoes	2,942	5,874	- 2,732	3,916	8,659	- 4,743	1,715	2,559	- 844
Turnips and Swedes	25,130	39,697	- 14,567	18,740	32,408	- 13,648	31,228	41,732	- 10,509
Manгоlds	7,547	3,061	+ 4,486	14,831	10,170	+ 4,211	7,458	4,667	+ 2,891
Cabbage	814	477	+ 337	1,068	866	+ 202	437	495	- 68
Kohi-Rabi	138	25	+ 113	170	18	+ 154	63	45	+ 18
Baps	490	570	- 80	2,245	3,048	- 803	1,542	2,911	- 1,369
Vetches or Tares	4,953	10,551	- 5,598	1,755	7,408	- 5,653	8,881	7,908	+ 4,025
Lucerne	896	277	+ 619	686	128	+ 400	278	169	+ 104
All Root and Green Crops	42,910	60,332	- 17,422	42,879	62,198	- 19,317	46,622	60,894	- 13,792
Clover, Sainfoin, For Hay and Grasses under Not Rotation	42,073	67,262	- 15,189	20,395	87,790	- 17,385	25,181	38,080	- 10,879
Total	66,198	94,276	- 28,081	37,180	66,332	- 29,152	39,242	55,290	- 16,048
Permanent Grass	178,082	181,125	+ 48,957	269,115	203,411	+ 65,704	108,075	85,808	+ 18,187
Grass Not for Hay	343,896	175,901	+ 68,095	408,920	382,945	+ 45,975	206,886	184,075	+ 41,811
Total	422,078	357,026	+115,052	678,035	586,356	+111,679	308,861	249,883	+ 59,978
Orchards:—									
Apples	11,118	(³)	—	23,540	(³)	—	4,021	(³)	—
Pears	2,405	(³)	—	571	(³)	—	221	(³)	—
Cherries	259	(³)	—	144	(³)	—	184	(³)	—
Plums	1,080	(³)	—	544	(³)	—	111	(³)	—
Mixed	4,154	(³)	—	1,774	(³)	—	674	(³)	—
All Orchards	18,997	12,980	+ 6,017	23,974	22,482	+ 1,482	4,140	8,696	+ 5,044
Small Fruit:—									
Strawberries	163	(⁴)	—	311	(⁴)	—	888	(⁴)	—
Raspberries	79	(⁴)	—	354	(⁴)	—	104	(⁴)	—
Currents and Gooseberries	438	(⁴)	—	187	(⁴)	—	87	(⁴)	—
Mixed	988	(⁴)	—	564	(⁴)	—	113	(⁴)	—
All Small Fruit	1,668	(⁴)	—	1,096	(⁴)	—	1,192	(⁴)	—
Other Crops:—									
Acorns	86	(⁵)	—	125	(⁵)	—	85	(⁵)	—
Sainfoin	180	(⁵)	—	42	(⁵)	—	9	(⁵)	—
Spelt wheat	87	(⁵)	—	48	(⁵)	—	18	(⁵)	—
Flax	2	(⁵)	—	70	(⁵)	—	18	(⁵)	—
Sugar-beet	60	(⁵)	—	47	(⁵)	—	1	(⁵)	—
Barley	65	(⁵)	—	10	(⁵)	—	8	(⁵)	—
Maize	80	(⁵)	—	20	(⁵)	—	7	(⁵)	—
Others	1,453	2,280	- 847	1,300	1,323	- 23	787	874	- 167
All Other Crops	1,898	2,280	- 482	1,852	2,085	- 233	888	1,999	- 1,111
Grass	3,229	12,238	- 8,964	1,321	9,826	- 8,505	1,655	8,332	- 6,786
Total Area of Land and Water	805,794	804,977	—	1,087,642	1,049,815	—	688,806	677,865	—

The acreage of Rough Grazings (Mountain and heathland, used for grazing) was first collected in 1898, when the areas in Gloucester, Somerset, and Dorset were 34,417, 12,207 and 5,036 acres respectively.

The acreage of Woodlands was not collected in 1878, but the acreage in 1880 for Gloucester was 61,307 acres, for Somerset 34,720 acres, and for Dorset 34,324 acres.

Details of the acreage of Orchards was first collected in 1897 when Somerset returned 24,212 acres of Apples, 26 of Pears, 14 of Cherries, 34 of Plums, and 24 of Mixed Fruit; while Dorset returned 2,404 acres of Apples, 26 of Pears, 14 of Cherries, 34 of Plums, and 24 of Mixed; and Gloucester returned 14,423 acres of Apples, 1,401 of Pears, 209 of Cherries, 34 of Plums, and 24 of Mixed.

Details of the acreage under Small Fruit was first collected in 1897 when Somerset had 2,404 acres of Strawberries, 21 acres of Raspberries, 124 acres of Currants and Gooseberries, and 144 acres of Mixed Fruit; while Dorset returned 24 acres of Strawberries, 4 of Raspberries, 20 of Currants and Gooseberries, and 24 of Mixed Fruit; and Gloucester returned 201 acres of Strawberries, 10 of Raspberries, 30 of Currants and Gooseberries, and 24 of Mixed Fruit.

The acreage under Maize was first collected in 1898 when Somerset returned 20, 6, and 30 acres, Gloucester 20, 6, and 30 acres, and Dorset 20, 6, and 30 acres.

*Number of Live Stock in Gloucester, Somerset and Dorset
in 1912 and 1878.*

	Gloucester			Somerset			Dorset		
	1912	1878	(Changes shown)	1912	1878	(Changes shown)	1912	1878	(Changes shown)
Horses —	No	No	No	No	No	No	No	No	No
Agricultural	20,622	19,768	+ 854	27,822	24,117	+ 3,715	13,240	13,262	— 22
Stallions for Service	138	—	—	180	—	—	52	—	—
Unbroken—1 year and over	4,208	5,967	— 19	5,890	9,950	1,418	1,583	2,958	— 772
under 1 year	1,602	—	—	2,482	—	—	571	—	—
Others ¹	4,652	—	—	5,573	—	—	2,518	—	—
All Horses	31,222	25,725	+ 5,497	41,937	34,067	+ 7,870	17,944	16,220	+ 1,724
Cattle.—									
Cows and Heifers—in milk	85,529	—	—	102,369	—	—	50,897	—	—
" but not in milk	9,875	35,927	+ 9,477	19,812	98,202	+ 23,979	9,161	49,148	+ 10,800
Others—2 years and over	26,670	26,776	— 1,106	41,428	44,657	— 3,231	10,827	10,728	— 99
" 1 year and under 2	34,115	44,538	+ 16,303	41,574	58,835	+ 18,254	12,513	17,601	+ 6,728
" under 1 year	26,720	—	—	56,365	—	—	11,811	—	—
All Cattle	131,909	107,236	+ 24,673	240,548	201,544	+ 39,002	91,059	77,475	+ 17,124
Sheep —									
Breeding Ewes	129,418	244,484	— 61,215	185,451	467,186	— 188,711	157,983	318,528	— 118,699
Others—1 year and over	51,851	—	—	115,024	—	—	41,851	—	—
" under 1 year	145,612	172,969	— 26,757	175,883	219,428	— 68,535	111,842	183,729	— 69,587
All Sheep	326,881	416,853	— 89,972	468,358	686,614	— 250,246	313,676	502,257	— 188,581
Pigs —									
Breeding Sows	9,588	—	—	11,357	—	—	6,451	—	—
Others	68,934	—	—	106,146	—	—	50,243	—	—
All Pigs	78,522	68,931	+ 9,599	117,503	106,173	+ 11,330	56,694	45,658	+ 11,036

¹ Other horses were not included in the returns until 1911

the changes in the various crops, wheat shows by far the biggest decline in all three counties, followed in each case by barley, beans and peas in the order given, except in the case of Dorset where the decline in the area under peas exceeds that under beans. In each county the area under oats has increased very appreciably (+ 16,440 acres in Gloucester, and + 12,810 acres in Dorset), having probably replaced the wheat crop to a certain extent (and it is noteworthy that this increase has been attended with serious outbreaks of eel-worm attacks upon the crop); there are trifling increases in the amount of rye grown. Root and green crops show in most cases corresponding declines; there are large reductions in the areas devoted to turnips and swedes, and it is a little surprising to note that potatoes also show a very considerable decline, amounting to as much as 50 per cent. in Gloucester, and even more in Somerset. Mangolds, on the other hand, show practically a 50 per cent. increase in the three counties, and

there are large advances in the proportion of cabbage grown in Gloucester and in Somerset, amounting to 70 per cent. in the former and 190 per cent. in the latter. A much larger area also of lucerne is now grown, there being an increase of 223 per cent. in Gloucester, 365 per cent. in Somerset, and 62 per cent. in Dorset. Probably the increase in dairying, particularly in the direction of milk-production for the town supply, will account for the increased area under these crops. Rotation grasses have declined 30 per cent.

Coming to fruit and vegetables, there has been a considerable development in orchard fruit, particularly in Gloucester, where the increase in the planted area amounts to 54 per cent. The increase in small fruit is even more marked. Figures are not available for 1878, in fact, they were not collected until ten years later, but since the year 1888 the acreage has increased by 58 per cent. in Gloucester, 281 per cent. in Somerset, and 216 per cent. in Dorset. The increase in acreage of both orchard and small fruit has been accompanied by a corresponding improvement in the methods of management, and with the increasing demand for high-class English fruit and the growing consumption of cider, there is every reason to anticipate a further development in this department of agriculture.

The areas under minor crops hardly call for notice, but the virtual abandonment of flax-growing in Somerset and Dorset is noteworthy in connection with the movement recently set on foot by the British Flax and Hemp Growers Society¹ for the re-introduction of this crop in various localities. Gloucester does not appear to have grown more than two acres of flax in any year for some time.

Teazles are another unimportant but interesting crop still cultivated in Somerset, and a description of the methods pursued will be found in another part of this volume.²

The custom of bare fallowing has declined very considerably during the period under review, and whilst the actual percentages (73 per cent. in Gloucester, 81 per cent. in Somerset, and 58 per cent. in Dorset) are no doubt affected to some extent by weather conditions in the years 1878 and 1912, they suffice to show the tendency to more intensive cultivation.

Coming to the live stock, it might be expected that the decline in the area under the plough would be accompanied by a reduction in the number of agricultural horses, but this is not the fact. In Dorset there is no variation, and in Gloucester there is a small increase amounting to 4 per cent., whilst in Somerset there is an increase of no less than 15 per cent.,

¹ See page 127.² See page 144.

Similar increases in the face of declines in the area of cultivated land have been noted in other districts, and the reason is not very obvious, unless it be that cultivation is becoming more intensive, or that the development of horse-labour in connection with such implements as reapers, binders, and mowing machines in the last thirty years has more than compensated for the reduction in the plough-land. Or it may be that the breeding of heavy horses by tenant farmers is less localised than it used to be, and that the demand for horses for the towns has increased. The increase in dairying is again brought out by the statistics, for cows and heifers in milk or in calf have increased by 23 per cent. in Gloucester, 24 per cent. in Somerset, and 22 per cent. in Dorset. In the case of other cattle the numbers of two-year-old and over show a decline in each county, whilst there is a very large increase in the numbers under two years. Probably the increase in the attention devoted to dairying has led to an increase in the number of in-calf heifers, which are included with the cows, with a corresponding decline in the head of two-year-old bullocks. "All Cattle" show gains of 23 per cent. in Gloucester, 18 per cent. in Somerset, and 22 per cent. in Dorset, and having regard to these figures it is only natural to find a very large decrease in the sheep stock of the three counties. The declines amount to 21 per cent. in Gloucester, and to 36 per cent. in both Somerset and Dorset. The increase in pigs is no doubt consequent on the increase in dairying, and amounts to 11 per cent. in Gloucester, 10 per cent. in Somerset, and 26 per cent. in Dorset.

Coming to the census figures, the table on p. 299 shows the numbers and grades of persons concerned in agriculture in the three counties in 1911 and in 1881.

In some respects the comparisons between 1881 and 1911 are not easy to follow, and it rather appears that too much reliance must not in all cases be placed on them. For example, it is not easy to understand why farmers and graziers should have increased by 23 per cent. in Gloucester and by 26 per cent. in Dorset, whilst remaining practically at the same figure in Somerset. Again, it must surely be that relatives were more in the habit of assisting on farms thirty years ago than at the present day, but from the figures in the table it would seem that the contrary is the case, and that their number has increased by 39 per cent. in Gloucester, by 25 per cent. in Somerset, and by no less than 103 per cent. in Dorset. The tendency towards smaller farms and the increase in the number of small holdings would no doubt account for a larger proportion of the family assisting in the work of the farm, but

1911—Administrative County } 1881—Registration County }	Gloucestershire						Somersetshire						Dorsetshire					
	Males			Females			Males			Females			Males			Females		
	1911	1881	+ -	1911	1881	+ -	1911	1881	+ -	1911	1881	+ -	1911	1881	+ -	1911	1881	+ -
Farmers, graziers .	4,020	3,279	+741	370	328	+42	7,031	7,078	-47	550	502	+48	2,731	2,163	+568	233	177	+56
Relatives assisting	1,792	1,230	+563	768	-	-	3,405	2,724	+681	1,962	-	-	1,345	662	+683	621	-	-
Bailiffs and foremen .	418	308	+110	1	-	-	386	387	-1	1	-	-	265	266	-1	1	-	-
Shepherds .	735	688	+47	-	-	-	467	544	-77	-	-	-	700	769	-69	-	-	-
Labourers—																		
In charge of Cattle	1,335	73	-1,262	-	-	-	1,473	28,479	-8,061	86	-1,062	-1,308	1,465	14,222	-12,757	156	787	-631
Do. Horses	2,018	18,650	-5,132	1,150	-611	-	2,695	-	-	-	-	-	2,480	-	-	-	-	-
Not distinguished	9,488	66	-9,422	66	-	-	13,350	-	-	68	-	-	6,665	-	-	18	-	-
Total .	20,476	24,274	-3,798	1,278	1,478	-200	28,787	37,212	-8,425	2,867	2,164	-72	15,051	18,072	-2,421	1,029	964	+65

probably the real explanation is that the census returns are filled up nowadays with more attention to detail.

When we come to the labourers (all classes) it is more likely that the tables give a true comparison and the rural exodus is brought out very clearly. Within the last thirty years Gloucestershire has lost 28 per cent. of its farm labourers, Somerset 33 per cent., and Dorset 25 per cent. Female labour shows an even greater decline, but there are, of course, explanations for this other than agricultural depression.

It would have been of interest to compare the numbers of those engaged in village industries in 1881 with those in 1911, but the census returns for these two years do not seem to lend themselves to any reliable comparison.

The age-classes of farm labourers are of interest as showing the migration of the men from the country districts. Figures are not available for 1881, but in the following table abstracted from the 1911 census it will be noted how in every county the number of lads going to work on farms increases each year from ten to sixteen years of age. Afterwards it is interesting to note how the labour requirements of other trades, and no doubt to some extent the attraction of the towns and the opportunities offered by the Colonies, assert themselves, and from seventeen years onwards there is a steady reduction. It is also noteworthy that the men twenty-five years of age and over outnumber those under twenty-five years by just two to one :—

Aggregate of Rural Districts 1911	Gloucestershire	Somersetshire	Dorsetshire
Labourers (all classes) ages	No.	No.	No.
10	2	15	7
13	214	294	43
14	492	597	308
15	491	645	367
16	523	676	369
17	510	625	348
18	426	545	313
19	361	539	325
20	1,405	1,905	1,294
21	2,006	2,500	1,790
25	1,977	2,620	1,557
45	1,902	2,449	1,137
55	1,834	1,672	1,020
65	1,023	1,215	760
	Total 25 and over, 8,242	Total 25 and over, 10,756	Total 25 and over, 6,592
	under 25, 4,456	under 25, 5,811	under 25, 3,454

Coming to the Farm Competitions, prizes were offered in five classes—two classes for farms in Gloucestershire, and three classes for farms in Somerset and Dorset. The entries were as follows :—

Name of Competitor	Name of Landlord	Extent of Farm		Rent per Acre	Labour Bul per Acre	Soil	Tenancy	Remarks
		Arable Acres	Grass Acres					
CLASS I. GLOUCESTERSHIRE. Farm of 250 acres, or over, exclusive of Down.								
1. Albert A. Anstee, Talbot Farm, Dyrham, Chippingham	Robert Wynter Blathwayt, Esq	61	367	428	11. 5s.	14s. Brash and clay	Yearly	
2. Henry Bridgman, Cleve Hill Farm, Downend, Bristol	Sir Charles Daniel Cave, Bart.	210	247	457	11. 17s.	32s. Light, over Pennant stone	Yearly	2nd Prize
3. George H Jones, Badminton, S.O., Glos.	The Duke of Beaufort	388	222	810	17s.	19s. Light and dry, over oolite	Yearly	1st Prize
4. Thomas Rich, Aldsworth, Northleach, Glos.	Lord Sherborne	599	89	688	10s.	19s. Great oolite	Yearly	Reserve
5. Joseph Thomas Withers, Faber Farm, Hambrook, Bristol	W. E. Mirehouse, Esq.	43	323	366	21. 2s.	24s. Various	Yearly	
CLASS II. GLOUCESTERSHIRE. Farm of not less than 50 acres, and under 250, exclusive of Down.								
6. William McEwen Smith, Westmoreland Farm, Henbury, Bristol	Maj. Gen. Sampson-Way, C.B.	23	135	158	17. 14s.	27s. Varies considerably	Yearly	2nd Prize
Henry Matthews, Down Farm, Winterbourne, Bristol.		159	90	249	11. 7s.	29s. Red sandstone, brash and loam	Yearly	1st Prize
8. Thomas Meredith, Latteridge, Lion Acton, Glos	The Rev. J. H. Battersby Harford	122	125	247	11. 7s.	22s. Medium and heavy loam	Yearly	

Name of Competitor	Name of Landlord	Extent of Farm		Rent per Acre	Labour Bill per Acre	Soil	Tenancy	Remarks
		Arable Acres	Total Acres					
CLASS III. SOMERSETSHIRE AND DORSETSHIRE. Farm of 300 acres, or over, exclusive of Down.								
9. John Cussins, Tarrant Rawston, Blandford, Dorset	Sir William Smith-Marriott, Bart., and others	500	200	11s.	14s.	Light loam and chalk	Yearly, but subject to 3 yr notice	
10. Arthur Hiscock, Manor Farm, Motcombe, Shaftesbury	Lord Stalbridge	6	258	17.	12s.	Light loam over chalk	Yearly	
11. Frank J. Merson & Son, Farrington, North Pether-ton, Bridgewater	Viscount Portman	276	135	17. 16s.	19s.	Various—mostly stone brash	Yearly	R. N. & H. C.
12. Thomas H. Pearce, Parson-age Farm, Long Ashton, Bristol	Lady Smyth	90	271	17. 14s.	19s.	Part deep loam, part thin soil over mountain limestone	Yearly	V. H. C.
13. William Pickford, Manor Farm, Melbury Abbas, Shaftesbury	Sir Richard Glyn, Bart.	250	201	8s.	7s.	Mostly chalk	Yearly	
14. Percy Cave Tory, Shapwick, Blandford, Dorset	Trustees, Banke's Estate	556	308	15s. 6d.	20s.	Very light chalky soil, over chalk	—	1st Prize
15. William Richard Withers, Lower Court Farm, Long Ashton, Bristol	Lady Smyth and others	10	394	2l.	26s.	Red sandstone and lias	Yearly	2nd Prize
CLASS IV. SOMERSETSHIRE AND DORSETSHIRE. Farm of not less than 150 acres, and under 300 acres, exclusive of Down.								
16. J. King Brain, Little Weston Farm, Sparkford, Somerset	A. L. Langman, Esq.	35	169	17. 12s.	19s.	Rather heavy sand, over gravel and clay	Yearly	1st Prize

Name of Competitor	Name of Landlord	Extent of Farm			Rent per Acre	Labour Bill per Acre	Soil	Tenancy	Remarks
		Arable Acres	Grass Acres	Total Acres					
17. William Butler, Gatecombe Farm, Flax Bourton, Bristol	Lady Smyth .	18	135	153	27. 9s.	33s.	Strong loam on clay, and sandy loam	Yearly	H. C.
18. Ralph Cox, Home Farm, North Cadbury, Somerset	A. L. Langman, Esq.	18	211	229	17. 19s.	21s.	Mostly sandy loam over clay	Yearly	Commended
19. Tom Dibble, Shopnoller, Bagboro', Taunton	Capt. M. B. Popham	160	123	283	17. 11s.	21s.	Red sandy loam and stone brash	Yearly	
20. (Withdrawn)									
21. (Withdrawn)									
22. Arthur Hardwick, Court Farm, Easton-in-Gordano, Bristol	Miss Hall	22	171	193	27.	20s.	Clay	Yearly	
23. Albert John Rowles, Hounstone Farm, Yeovil, Somerset	Thomas Moore, Esq.	46	183	229	27.	23s.	Loam on clay	—	R. N. & H. C.
24. William Walter Sampson, Mappercombe, Powerstock, Dorset	Capt. H. B. Nicholson	129	135	264	17. 6s.	28s.	Limestone and sand	Yearly	
25. Henry Shute, Church Farm, Marnhull, Blandford, Dorset	Lord Stalbridge	30	205	235	17. 15s.	26s.	Half stone brash, half heavy loam	Yearly	
26. Walter George Williams, Elm Tree Farm, Portbury, Bristol	Lady Smyth .	18	230	248	17. 13s.	32s.	Alluvial clay and sandy loam	Yearly	2nd Prize

Name of Competitor	Name of Landlord	Extent of Farm			Rent per Acre	Labour Bill per Acre	Soil	Tenancy	Remarks
		Arable Acres	Grass Acres	Total Acres					
CLASS V. SOMERSETSHIRE AND DORSETSHIRE. Farm of not less than 50 acres, and under 160 acres, exclusive of Down.									
27. Benjamin Robert Broughton, Hellings Farm, Crewkerne, Somerset	H. W. G. Hoskyns, Esq.	18	127	145	2 <i>l.</i>	22 <i>s.</i>	Heavy loam, over clay	Yearly	1st Prize
28. William Dauncey, Marsh Court Farm, Wincanton, Somerset	Alan Grant Dalton, Esq.	0	92	92	2 <i>l.</i> 1 <i>s.</i>	22 <i>s.</i>	Part sand, part heavy loam	Yearly	
29. Edward Hatch, Stoughton Cross Farm, Wedmore, Weston-super-Mare	W. Aldrit, Esq.	0	85	85	2 <i>l.</i> 19 <i>s.</i>	11 <i>s.</i>	Mostly alluvial	Yearly	
30. John Marshall, Ham Farm, Wroxall, Bristol	Lady Smyth .	12	85	97	2 <i>l.</i>	29 <i>s.</i>	Fairly stiff loam	Yearly	2nd Prize
31. Robert Lawrence Read, Shutter Oak, Crewkerne, Somerset	Warden and Fellows of Wadham College, Oxford	33	57	90	1 <i>l.</i> 11 <i>s.</i>	27 <i>s.</i>	Light	Yearly	
32. Samuel Andrews Rossiter, Lymburghs Farm, Marn-hull, Blandford, Dorset	Lord Stalbridge .	0	116	116	1 <i>l.</i> 2 <i>s.</i>	16 <i>s.</i>	Clay loam, over blue clay	Yearly	R N & H. C.

All the farms are Lady-day farms, and it is noteworthy that there is not a single leasehold tenancy amongst the entries. The contract of tenancy requiring two years' notice from either side to determine it is of interest in view of the suggestion recently put forward to make this length of notice legally necessary. Another and still more notable feature is the number of the tenants entering from the Ashton Court Estate, belonging to Dame Emily Smyth. On this property it has been the custom for some years to hold competitions for the best farm on the estate annually, and the winners are disqualified from competing again for a certain period. The excellent effect of this custom upon the quality of the farming upon the estate are evidenced by the Judge's awards in this year's competition, for all those of Lady Smyth's tenants entering received notice.

The instructions to the Judges were specially to consider :—

General management, with a view to profit.

System of cropping; cleanliness and management of both arable and grass land.

Quality and suitability of live stock, especially that bred upon the farm.

State of gates, fences, roads, general neatness, and state of cottages, as far as tenant is liable.

Management of the dairy and dairy produce where dairying is pursued.

The duration of the tenancy.

Mode of book-keeping followed (if any).

GLoucestershire.

The first-prize farm in Class 1 is that of Mr. George H. Jones, at Badminton. The charming old house and the home-stead adjoin the Park, and on the occasion of a visit¹ the beautiful herd of the old Gloucestershire breed of cattle,² belonging to the Duke of Beaufort, were to be seen grazing near the gates. The farm is situated towards the western extremity of the Cotswolds, on the road from Cirencester to Bristol, being distant about twenty miles from Cirencester, about fifteen miles from Bristol and Bath, and about ten miles from Chippenham.

The farm is 810 acres in extent, of which less than one-third is permanent pasture; the soil is the "brashy" soil of the Cotswolds, and inclined to dry out, and a general description of the farming of the district appears elsewhere in this volume.³

¹ Most of the remarks in the Reports following relate to visits in June and July.

² For a description of this breed see *R. A. S. E. Journal*, Vol. 70, page 415.

³ See page 23

The buildings, though serving their purpose, are only fairly good when contrasted with the magnificent homesteads of the Midlands and northern parts of England, and whilst the absence of anything in the way of "window-dressing" is to be commended, a little more tidiness about the premises would be an advantage. Some useful Dutch barns enable the tenant to market considerable quantities of wheat straw in good condition, and at three convenient points on the holding there are additional premises for stock.

Mr. Jones follows a five-field system of cropping, with seeds left down for two years, but a considerable breadth of sainfoin left down as long as it will stand breaks into the rotation to a certain extent. The cropping for this year was as follows:—

96 acres	roots (i.e., mangolds, swedes, turnips, rape and kale)
108 "	barley
80 "	1st year clover
78 "	2nd year clover
93 "	wheat
44 "	oats
48 "	sainfoin
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The roots receive 4 cwt. superphosphate, and up to 10 tons of dung when it can be spared. It is the practice to sow four rows of swedes and one row of kale, and upon this mixed keep the sheep thrive exceedingly. Last year's swede crop was an excellent one, but the young plants this year were rather late, and having regard to the dryness of the season the land was none too clean. No doubt the sainfoin leys and the custom of keeping clover down for two years tend to increase the difficulty of cleaning the land. The barley was rather late sown owing to excessive rains, but looked well, and was promising a heavy crop. Both autumn and spring wheat is grown, following sainfoin or clover on which most of the dung has been spread. This year (June) the crop was beautifully level and full of promise. The clovers, too, had done well in this season of record hay crops, and there was an excellent field of sainfoin, part of which was being grazed by the lambs, whilst the remainder had given a heavy cut of hay. Like most of those who have had experience of this crop, Mr. Jones finds that the land requires a long rest from it, and once in twenty years is said to be often enough for a crop of sainfoin. With the few reservations made above, the management of the arable land appeared to be excellent.

The horses are a useful stamp of Shire; a few foals are bred and a few more bought each year, Mr. Jones' practice being to keep selling out at six and seven years all those good enough for road work in the towns. A good deal of the ploughing is

done with three horses abreast in double-furrow ploughs. The condition of the horses and their harness bore witness to that care and attention on the part of the horsemen which is so characteristic of these men in almost every part of the country.

The cattle are managed mainly for the production of beef, but Mr. Jones also rears a few young bulls. There are nine Shorthorn cows, all of good quality, which rear about four calves each. The practice of the tenant is to buy only well-bred Shorthorn calves from the best herds for this purpose, and the Judges specially remarked upon the quality of the yearlings shown to them. A few of them are kept each year for sale as farmers' bulls, and the steers are ready for the butcher at two years. The calves are weaned as soon as possible and kept going with cake and meal up to 2 lb. until about eighteen months, when they go out to grass. Cattle in the yards are finished on mixed meal and roots.

The flock consists of 306 Hampshire ewes, and the Judges specially remarked upon the high standard of uniformity and excellence they presented, proof of care and skill in selection and mating exercised over many years. This year's crop of lambs represents nearly $1\frac{1}{2}$ per ewe. The sheep are on the arable land nearly all the year, turnips, swedes, and kale in the winter, and clover and sainfoin in the summer. This close stocking of the plough-lands, with sheep is essential in the management of the light dry soil of which the farm is mostly composed, though whether the custom of manuring the corn crops solely through the sheep, helped out with dung from the yards, might not be varied and improved by the addition of judicious quantities of artificial manures is a point well worthy of consideration. As soon as the lambs can eat they get some cake and meal, and the quantity is increased until they are getting $\frac{1}{2}$ lb. daily. They are weaned on the sainfoin. About 100 ewe lambs are brought into the flock each year, and the remainder of the lambs, together with upwards of 150 more which are bought in the autumn, are fed during the winter and early spring.

Mr. Jones feeds a good many pigs, both large blacks, and the local black and white Gloucester breed. Most of them are bred on the farm, a few young pigs being occasionally bought, and upwards of 100 are sent to the bacon factories each year.

Mr. Jones keeps a careful record of receipts and payments, and his farm may fairly be said to be representative of the best management of the district. He is assisted in his work by Mr. Barton, and the well-filled nag stable enables them to be constantly amongst the men on this large holding, whilst testifying also to their love of that sport for which the great estate on which they live has so long been famous.

The second prize in Class I. was awarded to Mr. Henry Bridgman, for Cleeve Hill Farm, Downend, Bristol. His farm is situated about four miles north-east from Bristol ; it is about 450 acres in extent, rather more than one-half being grass. The soil is light, overlying the Pennant grit, which is not generally productive of the best soils. The farm-house is pleasantly situated, and the buildings are commodious and well planned. In some points they require bringing up to date a little, as for example in the floors of the cowhouses, which are not laid to admit of the cows' udders being kept clean. The hedges and the stone walls were in good repair, but the nettles in both might be kept closer cut with advantage. Mr. Bridgman aims at having the same quantity of land under corn as under roots and clover every year, but he does not adhere strictly to a rotation. His cropping for this year was :—

Roots	50 acres
Barley	45 "
Clover	50 "
Peas	6 "
Wheat	35 "
Oats	14 "
	<hr/>
	200
	<hr/>

Vetches and trifolium are grown as catch crops, and the land is sown with roots when they come off. The roots receive artificial manure, but superphosphate is avoided on account of the tendency to finger-and-toe on this land. Probably a dressing of lime would prevent this, and would also have a mellowing influence on the soil. The steely nature of the clods also suggested the need for lime, and it might be remarked that it is a pity farmers do not more generally avail themselves of the facilities for cheap analysis for lime in soils which are offered nowadays in every locality. A field of swedes showed signs of good heart, and was fairly clean, the only weeds being annuals in the rows, which would disappear in the singling ; but the judges commented on the dirty state of a fallow after wheat following sainfoin. Thus, the difficulty of cleaning light land after an old sainfoin ley again appears, and it might be worth while to consider the advisability of taking a crop of mustard after sainfoin, and then vetches, to smother some of the weeds, before putting in wheat. Only a few rows of potatoes, grown for the men, were to be seen ; formerly more were grown and sold in the ground to Bristol dealers at prices ranging from 15*l.* to 20*l.* per acre. No artificials were used, and considering the proximity of a splendid market it seems a question whether the crop might not once more be exceedingly profitable if grown in accordance with more modern ideas on manuring.

The barley showed signs of excellent tillage ; it is not Mr. Bridgman's custom to use any artificial with this crop, and its appearance might have been improved by the addition of some phosphatic manure. There was an excellent plant, evenly germinated, but thin and inclined somewhat to a starved appearance.

The seeds were Sutton's No. 2 mixture, which is always used by Mr. Bridgman, although he rarely leaves it down for two years. There was a fair stack of rye-grass hay, made from a mixture of trifolium and rye-grass, grown as a catch-crop, and folded off first of all in the spring. The intention had been to get in roots after the fold, but this being impossible owing to the season, the extra hay crop was snatched—an admirable illustration of the tenant's ability to make the best of a situation. With regard to the grass land, Mr. Bridgman follows the best practice, and mows the same fields year after year. The grass is cut young, which he says gives him better hay, and better aftermath—a very sound practice, and one too rarely followed. The home meadow, like some of the arable land, suggested the need of liming. The grazing land was situated some six miles away. The tenant says it will now carry a larger head of stock than when he first took it, and seeing that the only change has been the more systematic grazing which he has practised, it affords an illustration of what can be effected by skilful management apart from manuring.

The horses are for the most part Shires of the best stamp. They included a filly which would be a credit to any farmer, and showed it by winning first prize in the local class at the Bristol Meeting. One team at work on a fallow consisted of a three-year-old, being grown on for work ultimately on the streets, and an aged horse bought out of a mineral-water cart, which had finished its work on the roads and come back to the farm for a few years. This team is an excellent example of the means by which a competent man may turn his working horses to profitable account. Mr. Bridgman has a milking herd of about 50 head, besides heifers and calves. The milk is sold in Bristol, and the retailers call for it at the farm twice daily. This is a great convenience, and considering the nearness of this fine market, the Judges express the opinion that the tenant might very profitably direct his attention to the further development of this side of his business. No doubt the fact that so much of the grass land is some six miles from the homestead operates against the tenant in this respect. The cows are somewhat uneven, but there were some grand dairy cows amongst them. No milk records are kept, and in these days they should be regarded as absolutely essential by every

milk seller. The cows were being run over the seeds ley for a short time each day, which seemed a good practice, and they were getting about 7 lb. bran. In the autumn this would be increased by a fair allowance of cabbage, swedes, and hay. It is Mr. Bridgman's practice to buy heifers of the right stamp, and at the right price, and to bull them. The best of them go ultimately into the dairy, whilst those that do not turn out to be good milkers are not too dear as feeding cattle. Whilst an excellent system, and one well calculated to make the most of the land, it no doubt accounts to some extent for the unevenness in the cows to which reference has been made. The home-bred two-year-old heifers were a beautiful lot, obviously "general utility" of the best type; they were the single crop of calves got for Mr. Bridgman by a particular bull, and it is most unfortunate that this sire's breeding is unknown, for he obviously nicks in with the blood in the herd at Cleeve Hill.

Mr. Bridgman showed the Judges an excellent two-year-old Shorthorn bull, and it seemed the greatest pity again that there was no record of his breeding. There was also a nice yearling bull, but he seemed to lack some of the depth and quality of the older one.

The steers are most of them purchased and some eighty are got off fat during the year. Mr. Bridgman studies the markets and during last winter he fed principally maize and bran as being the cheapest foods at the time. The calves get very little milk and are brought up mostly on oatmeal.

Coming to the sheep, Mr. Bridgman keeps a Hampshire flock and buys in about 140 ewes each year. An Oxford tup is used on them and some of the lambs, which fall in February, are ready for the butcher by July. The best of them are kept for sale as ram-lambs, and the tenant states that there is a very ready sale for them, particularly amongst the hill flock-masters of Wales, &c., who put them on the old ewes and feed out lamb and ewe together. The ram-lambs shown to the Judges were quite a distinct type, with Hampshire heads and Oxford fleeces, but why there should be this preference for them is certainly a question to which breeders of pure-bred stock should devote themselves. The Hampshire ewes were a grand lot and some were being got ready for exhibition. Mr. Bridgman complained that in spite of constant attention they suffered a good deal from foot-rot. On the occasion of the final visit, the ram-lambs were separated from the wethers and ewes. The former were on a field of tares and rape and the latter were on the seeds and also cleaning up behind the rams. The fat lambs were also on tares and rape, which seems to be a very good mixture, though not commonly met. Those ready for the butcher

(July) would weigh a good 8 stone, and make 9*d.* per lb., though they were not getting quite 1 lb. per day of a mixture of linseed cake, bran and locust beans.

The pigs were the East Anglian type of large blacks, and it is claimed that they have an advantage over the local "blues" on the score of large litters. It is Mr. Bridgman's practice to get out a number of fat bacon pigs at six months; those shown to the Judges were being fed on sharps at 5*l.* per ton—an excellent food, 3*l.* per ton cheaper than barley meal, and a good example of economy in management.

Mr. Bridgman has planted about 7 acres of apples at his own expense and the young trees look very promising. He complained of some difficulty in getting labour in busy seasons, though his own cottages were sufficient for ordinary purposes.

In Class II. the first prize was awarded to Mr. Henry Matthews, of Down Farm, Winterbourne, Bristol. His home-stead lies very nicely by the roadside, about six miles north of Bristol. The house and buildings are very conveniently planned and the surroundings generally were neat and tidy, though the Judges commented rather adversely upon the state of some of the fences, which may, however, be accounted for in some degree by the fact that the farm lies rather wide and is much intermingled with the fields of other occupiers. The tenant has erected a large Dutch barn and some piggeries at his own expense. The farm is about one-third grass. Mr. Matthews follows the ordinary "Norfolk" course of cropping, but he takes beans instead of roots on the strong land, and the area under each crop for 1913 was:—

Roots	24 acres
Beans	12 "
Barley and oats	22 "
Clover	45 "
Wheat	36 "

Mr. Matthews is a great believer in the economy of heavy dressings of dung on his land, and he carts large quantities of stable manure from Bristol. The land in fallow crops was clean, and the swedes, which were looking well for the season, get 20 tons of dung besides 5 cwt. of artificial (bone-meal and "turnip manure") per acre. For mangolds about 40 tons of farmyard manure are applied in the winter, with a further 20 tons, hauled from Bristol, in the spring. These seem to be heavy dressings, but it is possible that on the sandy parts of the farm the humus thus supplied is of such value as to warrant what might otherwise be described as extravagance. The beans were a very fair crop for the season, and they improved considerably when the heavy rainfall in the early

part of the year began to slacken. Like most spring crops in 1913 the barley was got in rather late; the soil was a fine red sand—"a typical barley soil," the Judges described it—and the crop had germinated well and was beautifully even. The clover seeds were very good even in this year of wonderful seed crops. The wheat, most of which followed a bean crop on a piece of strongish land with a good clay subsoil, was the best piece shown to the Judges by any competitor. The variety grown was "Square-head's Master," and it was a grand, level piece standing nearly six feet high before all of it was in ear. Mr. Matthews has since informed the writer that one part of it yielded 60 bushels per acre, whilst the rest of it yielded 8 sacks of wheat, and 6 sacks of beans self-sown from the previous crop. The barley also turned out well, and won the diploma for the best barley grown in Gloucestershire at the Brewers' Exhibition, 1913. The grass land had every appearance of good management; it is the tenant's custom to apply town manure to the meadow land, and to give the pastures a coat of farmyard if it can be spared. Coming to the livestock, Mr. Matthews is a great believer in the value of pedigree, and all his stock is registered, or at least eligible for the various books. The farm horses are registered shires, and all except one of them are under six years of age. Two or three foals are bred each year, and if a mare misses a good foal is bought, so that Mr. Matthews always has a good young horse or two to sell into the towns, which will help to make the working horses profitable. The cows are dairy shorthorns, nearly all of them bred on the farm, and the herd of twenty-five showed evidence of careful selection and mating; it was a matter of no surprise to learn that several of them had won prizes at local shows. The Judges were also impressed with the bull in service, bred by Mr. Harrison, of Gainford, and bought for a high figure. All the yearlings and calves were bred by Mr. Matthews. The cows are milked for Bristol, the price realised in 1912-13 being 11*d.* for the winter months and 8*d.* for the summer. They were getting about 3 lb. cotton cake on the grass and some vetches or clover, and as regards the winter feeding, Mr. Matthews gives about 40 lb. mangolds, hay, a little oat straw, and 4 lb. of cotton cake and a few pounds of sharps or meal. The young stock have cut roots, barley straw, and about 3 lb. cotton cake. Once again it is to be regretted that the milk records of this beautiful herd have not been kept, but that the cows are good milkers is proved by the fact that they have won first prize on three occasions within the past ten years for the best herd of cows, under forty, to be judged on the farm, in connection with the Bath and West Shows. The sheep are Oxford Downs, and a flock of fifty registered ewes is maintained. Like the

rest of the stock they reflect the skill of the breeder, and are a beautifully level lot. The tegs go on to vetches, kale and swedes, with cake and dried grains, and go out fat during the winter. A considerable number of pigs are kept, and once more the large black is the variety preferred. The sows are all pure bred. Two boars, eight sows in farrow, and twenty-two pigs nearly fat were shown to the Judges on the occasion of their first visit. The boar in service was a good specimen of the breed, and the fat pigs are sold to a local bacon factory.

Mr. Matthews is a man of many activities. In addition to his farming he keeps two sets of machinery, and does most of the threshing in his neighbourhood. He also finds time for much public work, and is a member of the County Council and other local administrative bodies. The Judges had no difficulty in awarding him the premier position in this class.

Mr. William McEwen-Smith, of Westmoreland Farm, Henbury, Bristol, received second prize in this class. The farm adjoins the beautiful little village of Henbury, which is distant some three miles north from the Showyard on Durdham Downs, and about the same distance east of Avonmouth. The farm is 158 acres in extent, comprising 132 acres pasture, 23 acres arable and 3 acres orchard. The house and buildings are very neat, compact, and useful; a first-rate shed for calves, bull, &c., has been made out of the old barn. These places when converted for the use of livestock are too often ill-lighted and ill-drained, but neither of these defects were noted in this case. The cow-house, however, suffers from the same defects noted on a previous holding, in that the floor is not so constructed that the udders of the cows are kept from contact with the dung. The holding has recently been equipped with a first-rate Dutch barn, and on the occasion of a visit (July) hay waggons were being unloaded into it with the aid of a travelling fork in the roof, operated by a horse. This device undoubtedly effected a saving of trouble to the men, but the advantage to the farmer cannot be considerable.

The soil shows considerable variations, being strongish clay in some parts, whilst in others the subsoil rock came to the surface, suggesting the reflection that it cannot be wise always to let the young ploughman learn to plough with wheels, seeing that here is obviously a place for a swing plough. The course of cropping pursued is a four-course, modified to suit the farm, and the crops in 1913 were :—

5 acres	roots (mangolds 2½, kohlrabi 1, cabbage ½, potatoes ½).
9 "	wheat.
4 "	beans.
4½ "	oats.

The oats were sown with clover seeds.

The mangolds were not good, but neither was the soil very suitable. Mr. McEwen-Smith drills a few carrots with them, and these are always left at singling to provide a few roots for the horses in the winter—a good idea. The potatoes were half a failure, but the condition of the soil—harsh, intractable clods—showed the difficulty of working the land, and indicated the great skill necessary to secure the wonderful corn crops seen. The tenant had a fine bed of cabbage and kohlrabi for planting out. It is his custom to fill up the mangolds with kohlrabi—a practice which should be universal instead of rare, and one which shows the ability of the man to make the most of his land.

The wheat was particularly fine, with a very heavy crop of straw for which the tenant said he has a market up to 4*l.* per ton. Of this he takes full advantage, even to the extent of sowing wheat in February instead of barley.

The grass land, which constitutes the more important part of the holding, showed considerable variations. The home pasture carried a beautiful close sward, and was exceptional in this respect, the reason possibly being that it is always grazed, whereas the rest of the fields are grazed and mown in alternate years—a most undesirable practice. Another questionable custom in the management of the meadow land is that of spring grazing up to May 1. This pushes back the hay harvest until the end of July or August, before there is enough bulk to cut, with the result that fog, barley-grass, &c., ripen, and shed their seed. The proportion of these grasses in the fields was too high. Some of the fields, too, contained a good deal of rattle, and of quaking grass, but these were not to be found in any quantity in a field where surface grips had been cut many years ago on account of a liability to flood. A quantity of street sweepings are carted from Bristol and spread upon the fields to be mown. Mr. McEwen-Smith illustrates a change that is coming over the process of hay-making, in that he uses only a swath-turner; and the old tedder, once thought indispensable, is now only brought into operation in cases where rain has thoroughly saturated the swath. The Judges commented on the poor quality of some of the grass land, and expressed the opinion that too much hay was being made and sold. Owing, however, to the wonderful situation of the farm as regards markets, there is no doubt that almost everything grown on it must be capable of direct marketing, and so long as adequate provision is made to protect the holding, the tenant would seem to have some reason for taking full advantage of his position.

The horses were good, and eminently suited for the work. A pair of very active half-bred horses were suggestive of the old

pack-horse type, but still heavy enough to plough the land in winter. The tenant remarked that they could cut nine acres of grass in the day, and then cart hay in the evening without loss of condition. There was a two-year-old got by a thoroughbred out of one of these mares, likely to make a useful carriage horse; and also a yearling got by a shire horse out of the same mare, likely to make an animal similar to the dam herself. The cattle are kept entirely for the production of milk, and all the cow stock on the farm speak of skilful breeding. A herd of pedigree Shorthorns is gradually being built up, which only wants the addition of milk-records to make it quite first-class. There are also a few Jerseys to keep up the quality of the milk, and three nice Dutch heifers, bought as a bargain from an amateur farmer in the district. The bull was an excellent type of long-pedigree dairy Shorthorn, and a Jersey bull, kept mainly for the use of the local residential "villa farmers," bore witness to the quickness of the tenant to see and to supply a local demand. It was surprising to learn that the tenant's farmer neighbours were willing to pay a full pedigree fee for the service of the Shorthorn bull, as this is not the usual experience; and it is to be hoped that it indicates an increasing appreciation of the value of good blood. The heifers were a really beautiful lot, and the calves in the paddock were a wonderful testimony to the advantage to be got by allowing them to have milk from their mothers for the first month. These calves, at seven weeks, and getting practically no milk, had all the appearance of sucking calves. It is a question for the consideration of the farmer whether forty or fifty gallons sucked in this way is not worth more to the calf than a hundred gallons gulped out of a pail.

No flock of sheep is kept, but a small bunch of Hampshire ewes are bought each year to lamb down early, and to be fed out with their lambs. This being so, it is not surprising that the Judges were not impressed with the sheep they saw. Coming to the pigs, Mr. McEwen-Smith keeps a Berkshire boar, workmanlike, but nothing more; and once again are found sows of the Essex large-black breed. He had also some so-called cross-breds, which surely must be the old Gloucestershire blue-and-white breed, examples of which were seen at Mr. Jones' farm at Badminton. Mr. McEwen-Smith gets all his pigs out as small porkers, and it might be remarked that nearer London the colour would prejudice them somewhat for this trade, but he did not find this to be so in the Bristol market. Mr. McEwen-Smith is no novice in prize farm competitions, for during the past nine years he has won two firsts and a second in the West Gloucestershire Society's contests.

SOMERSETSHIRE AND DORSETSHIRE.

In the class for large farms in the two counties, the first prize was awarded to Mr. Percy Cave Tory, of Shapwick, Blandford, Dorset. The principal homestead lies in a pleasant valley below the downs, about six miles south-east of Blandford. The house and garden are very attractive, though the buildings at the home yard are on the whole only fairly convenient. The cow-sheds are beautifully airy, but would be improved with stall-divisions, and with better floors; the absence of gutters makes it impossible to keep the cows' udders clean. The farms are very extensive, amounting to some 1,549 acres, which includes a farm of 685 acres, some nine miles from Shapwick, and also down land of some 90 acres. The Shapwick land is somewhat less than half grass and consists of a very light loam, overlying the chalk, which comes very near the surface at the top of the farm. A five-field system of cropping is practised for the most part, with a two-year clover ley. In 1913 the cropping was:—

137½	acres roots (Mangolds, 16 acres; Swedes, 56 acres; Turnips, 62 acres; Cabbage, 3½ acres)
170	„ oats
34	„ barley.
87	„ clover (for hay).
59	„ wheat.

The remainder of the arable land was in sainfoin and catch-crops. The fallow crops were clean considering the amount of catch-cropping practised, and a crop of swedes and kale was coming remarkably well after winter vetches considering how little moisture there appeared to be in this thin soil. The land had been broken up by five teams of horses, working three abreast in double-furrow ploughs; in two days they ploughed 20 acres, with a roller following behind, and on the third day, two sets of harrows and a four-horse manure and seed drill got in the swedes and kale, in the proportion of four rows of swedes to one of kale. A ring-roll following up completed the work.

Some of the vetches still being folded were rather full of thistles, and the mangolds were a failure owing to the drought. The corn crops, particularly the wheat and oats, were very fine for the year. Mr. Tory's management of his seed land shows much skill. On the top of the hill he sows an ordinary mixture to which is added a bushel of common sainfoin, and this often gets him a good sainfoin ley without the expense of cleaning the land. There was also a beautiful aftermath (in July) of giant sainfoin and rye-grass on this part of the farm, where the rotation is turnips followed by oats, followed by sainfoin, and then oats again; this land can only be cropped at all by constant sheeping and long leys, and the Judges comment on the tenant's

skill in farming it. Lower down there was a fine aftermath of clover on which to tup the ewes, and it was all the more remarkable seeing that the tenant stole a hay crop from it after harvest in 1912. In places a good deal of the parasite *Broomrape* was noticed on the clover, which is usually due to impure seed.

The grass land has to a large extent been laid down by the tenant himself, using an ordinary one-year mixture with the addition of some white clover, and a little cocksfoot. This has proved very successful, but the custom of alternate haying and grazing which is pursued has nothing to recommend it. Some kainit dressings have been applied, and as might be expected on this chalk soil, the effects have been very noticeable. The down-land grass showed small patches of carnation-grass and small sedges where the water lay, and the paddock near the house contained a good many thistles. (A well-known land-owner in the East Midlands has been very successful in reducing the numbers of this horrible weed by drawing them with flat iron pincers on wooden handles; the men are able to cover as much ground as with spuds. Creeping thistles are killed by dressings of salt.)

The farm horses are of a useful class, and Mr. Tory breeds a few light horses to sell for hunters, having a particularly good looking mare which has bred him a foal for several years. The cattle are kept for milk, and at three different yards Mr. Tory milks about 150 cows for the sea-side market (Bournemouth). There were some grand cows in the herd—one a beautiful Barrington—but whilst being in every way workmanlike, the herd as a whole lacked type. Scotch bulls had been used to get some of the cows, and they showed it in their splendid spread of rib; this suggested the reflection that the effect on their milking qualities might be less desirable, but the tenant had not noticed any such tendency. The milk sent away averages about 350 gallons per day the year round. The Judges gave high praise to Mr. Tory's registered flock of 560 Hampshire ewes. In April these were folded on 36 acres of clover and sainfoin together with their lambs and 186 shearling ewes—in all, 1,323 sheep in four folds. After shearing, the lambs are weaned and go on to vetches. All the three-shear ewes are drafted, so that an entirely young flock is maintained, the uniform type and quality of which may be inferred from the fact that two-thirds of the male drop are left for rams and no fewer than sixty of them had been sold for an average price of 10*l.* by July. The Judges remarked that this flock is "managed to perfection."

The second prize in this class was awarded to a farm with hardly a single point of resemblance to that of Mr. Tory. The

farm of Mr. William R. Withers, Lower Court Farm, at Long Ashton, Bristol, is 404 acres in extent and entirely grass with the exception of 10 acres. It is situated about two miles out of Bristol, on the Weston-super-Mare road. The house is partly constructed out of the remains of a charming old manor-house, and the buildings for the cattle are new and good. There were some most excellent concrete drinking places at which cattle and horses could drink in cleanliness and comfort; these had been made by the landlord at the tenant's suggestion.

Being near Bristol the farm is managed entirely for milk production, and the Judges remarked that Mr. Withers' herd of Dairy Shorthorns was the finest they had seen. They are a collection of ideal dual purpose cattle, all of a roan colour, but if possible even more typical in shape than in colour. All the young stock are home-bred; many of them have been sold away as calves and bought back again as heifers or cows about to calve. Mr. Withers is an exceptionally fine judge of stock, so that he is able to get pedigree prices for non-pedigree stock.

The pastures are clean and well grazed, first by cows in large numbers on one field while another rested, and then by sheep and horses to clear up behind the cows. The sheep are Hampshires, and a flock of 100 ewes is maintained. A naturally fertile farm and excellently managed. The Judges record that competition in this class was very strong, and that had there been a class for Dairy Farms they would unhesitatingly have placed Mr. Withers first.

After leaving Long Ashton and motoring in the direction of Bridgwater a small herd of the old Somerset "sheeted" cattle were noticed. Youatt wrote of them nearly a hundred years ago as the "West Somerset breed," but already in his day they were getting scarce, and were being replaced by the Devons.

In Class IV., farms between 150 and 300 acres, the premier position was awarded to Mr. J. King-Brain, of Little Weston Farm, Sparkford. The holding is situated about four miles to the west of the old Fosse-way, being five miles south of Castle Cary and about eight miles north of Yeovil. The house and buildings are fairly complete and good, with the exception of some of the pig-styes, which appeared damp and ill-ventilated with bad floors, and some authorities would object to the head-to-head arrangement in the cow-shed. There is a good Dutch barn, an implement shed, and a water supply, all provided by the tenant himself. The farm is one-quarter arable, the remainder being grass and orchard. It is a typical dairy farm, managed for cheese-making in summer and milk-selling in

winter. The arable land is managed on a three-year rotation, there being about 12 acres wheat, 12 acres barley and oats, and about 12 acres of beans, roots, and maize. The fallows thus follow two corn crops and were very clean. The land had been drained by the tenant himself, but even then there was evidence of colts-foot and horsetail. The mangolds were seventeen inches between the rows—an unusual width—and mangold, turnips and maize were all a wonderful plant for the season, and indicated much skill in the working of the land. Mr. King-Brain has grown maize now for several years and finds it an invaluable crop for his cows. The wheat was partly autumn and partly spring-sown and all the corn crops promised a good yield. No artificials are used on them, and it may be that some might profitably be applied; the barley, for example, rather suggested an excess of nitrogenous manuring. The same remark applies also to the meadows and pastures, all of which seemed to want some phosphate to supplement the rich dung used on them. The meadows showed too high a proportion of weed-grasses, such as fog, due possibly to late hay-making owing to weather conditions. All the grass fields are admirably watered by a gravitation supply laid on by the tenant. About fifty cows are milked for cheddar cheese-making in summer, whilst in winter the milk is sent up to one of the big London dairy companies at about 10d. per gallon. Mr. King-Brain showed the Judges a good shorthorn bull in splendid condition, and his first-calf heifers and yearlings were a beautifully uniform lot. The tenant never keeps his calves until the mothers have proved themselves milkers—a good practice. Those dropped by the first-calf heifers are sold to eastern counties graziers, and to improve their feeding qualities they are sired by a Hereford bull. The second-calf heifers were also a nice lot, though not so good looking as the younger ones. The calves look as well as many that get much more milk, and this is doubtless accounted for by the fact that Mr. King-Brain always superintends their feeding. Special mention must be made of the dairy, where Mrs. King-Brain manages the cheese-making. One large cheese and one truckle is the daily output, and Mrs. King-Brain is to be congratulated on the careful records kept and the skill and method displayed. About 100 sheep are bought in the autumn and are wintered on the roots not required for the cows, going off fat in the spring. The breeding sows are a mixed lot, but all useful. The pigs were all going to Birmingham as “cutters,” instead of to the local bacon factories, and probably in times of more moderate prices it would be more profitable to grow a smaller pig with a view to supplying the factory demand. The feeding was rather unusual, but gave excellent results, except that the

pigs handled a trifle soft ; a mixture one-third barley. one-third wheat, and one-third maize is ground together, whilst about six hours before feeding whey is pumped from the dairy on to the mixture, and a good dash of "Uveco" is added. Allusion must be made to the apple orchards, both cider and culinary, which were healthy and productive, and 350 of the trees planted by the tenant himself. Mr. King-Brain, who has served more than twenty years in the North Somerset Yeomanry and is now squadron sergeant-major, was congratulated by the Judges on gaining first place in a very strong class.

The second prize went to Mr. Walter George Williams, of Elm Tree Farm, Portbury, Bristol. This is another holding on the Ashton Court Estate, and is situated about six miles west of Bristol on the road to Portishead and Clevedon. The homestead is pleasant, the buildings being fairly good, but the old cow-houses appeared defective in drainage and in ventilation, whilst in the new one the gutter was not sufficiently deep to admit of the cows lying clean. The farm is 248 acres in extent, of which 18 acres only are under the plough, so that no definite rotation is followed. The cropping however is very cleverly managed—peas, followed by cabbage, early potatoes followed by savoy, rye (for thatch) followed by swedes. The land was being kept clean under considerable difficulty from horse-tail, willow-weed, and may-weed, the first two indicating underground water. Mangolds were an exceptional plant, except where drilling had been delayed to conduct some trials for a manure company. There was a wonderful piece of Burgoyne's Fife wheat but the tenant said he could only get an extra 6d. per quarter for it, though it is of an equal milling quality to Manitoba hard, worth in most years 3s. to 8s. more on Mark Lane. The grass land lies very wet, but the grips are kept clean and open, and the thistles, which are very troublesome, had already been cut twice (July). The meadows lie inconveniently wide, necessitating long lengths of occupation road (kept well stoned by the tenant), but Mr. Williams makes the best of the fields, by leaving in each a stack of hay for winter feeding. The hay might be cut earlier with advantage. It is his practice to treat the grass land with basic slag one time, and superphosphate the next, which, whilst unusual, is treatment which can be justified in theory, and in this case the results were excellent.

Generally speaking the whole of the grass land was poor, so that all the more credit is due to Mr. Williams for his very fine herd of dairy Shorthorns. All of them are home-bred and about fifty cows are milked for the Bristol trade. The Judges were impressed by the quality of cows and young stock alike, and they are evidence of the highest skill and care on the part

of the tenant. There was a wonderful old long red Waterloo bull, full of quality and substance, and extraordinarily docile. A very fine Scotch Augusta bull is also in use, which seems rather a doubtful experiment to attempt on such a herd of deep-milking dairy cows. About twenty beasts are grazed in the summer, these being for the most part the misfits from the dairy, which no doubt accounts for the grand quality of the fat cows shown to the Judges. On the grass the cows get about 4 lb. or 5 lb. of cotton cake, and the grass is supplemented in autumn and spring by cabbage. In the winter roots, chaff, and hay are fed, and a few pounds of bran and meal are added to the cake allowed. The horses were young and good; the tenant follows the practice, already noted, of breeding young horses and working them on the farm until they are old enough to be sold into the towns.

Mr. Williams estimates that he has added some ten acres to the available area of his holding by cutting back over-grown hedges, &c., and the general impression created is that here is a farm of very moderate quality, and lying awkwardly for working, which is being farmed with the maximum of energy and ability. Mr. Williams has won many prizes in the estate competitions to which reference has been made.

Coming now to the last class (Class V.), that for farms between 50 and 150 acres, the first prize was awarded to Mr. Benjamin Robert Broughton, of Hellings Farm, at Crewkerne.

It is a compact holding of some 145 acres, of which only 18 acres are under the plough, and the house and buildings are pleasantly situated and suitable. The arable land is half in straw crops and half in roots each year. The turnips had missed and thistles were rather noticeable, showing how bad this land could be if it were not well farmed. The mangolds were a good plant and for the most part clean. The wheat, red king, was very fine, as also were the black tartar oats, and one wondered why Mr. Broughton does not try a better variety. They had been sprayed for charlock, and a piece left undone as a control showed the value of this treatment applied at the proper time. There was also a certain quantity of corn-cockle, a weed that is not infrequently introduced through the use of some of the "dry chick feeds" which are so popular nowadays, and which are largely compounded of the waste from the threshing machine. No clover is grown, which seems to be doubtful economy having regard to the nitrogen storing capacity of this crop. When two corn crops are taken in succession the tenant uses some artificial.

The grass land is decidedly useful for the most part, and this is largely due to the care and management of the tenant. He has experimented with slag and with super to determine

the best treatment for each field, and one field, not yet dealt with, and very inferior, was evidence of the wonderful improvement Mr. Broughton has effected. He follows the excellent practice of mowing the same fields year after year, instead of alternate mowing and grazing. These meadows looked very well, but it is a matter for regret that they are not watered; as they are, they cannot be grazed by the cows, and the second growth is fed off by sheep which are bought in.

No cart-horses are bred, but young ones are bought in, kept for eighteen months and then sold. This is no doubt a profitable system, given ordinary luck, but of course it entails much careful handling on the part of the men. Mr. Broughton has a charming blood mare of exceptional substance (a winner in India) with a beautiful yearling got by a premium horse. Services are got on very favourable terms, and the breeding of blood-stock is a fascinating pastime, but, all things considered, it is doubtful if this class of stock is so profitable for a tenant farmer as some others.

Mr. Broughton is a noted exhibitor of Cheddar cheese, and during the year 1912 the Somerset County Council Dairy School held its classes at his farm. The Judges desire to congratulate Mrs. Broughton on her skill and upon the state of her dairy, in which she herself gives instruction to numerous pupils. The milk for the dairy is supplied by a herd of about fifty Shorthorn cows. Most of them had been bought, but the heifers were all bred on the farm, and were a very fine lot. The bull which got them was an exceptionally good one to see on a farm of this size, and he was bred from a Dairy Show prize-winner. Some of the heifers looked rather too much of a beef type, and pointed to the desirability, already so often mentioned, of recording the milk yields of the dams. Pigs are quite a feature in Mr. Broughton's management, and at one period of the year the farm was carrying ten young sows and 110 store pigs for bacon. These are fed on meal and whey from the dairy. Another feature indicating the capacity to develop all the resources of the farm to their fullest extent was provided by the poultry. A large head is kept in movable pens, mostly white and silver Wyandottes, white Orpingtons, and Aylesbury ducks, but it may be suggested that the area over which they are distributed is too small, so that they are apt to foul the land unduly.

The hedgerows were full of weeds which should have been cut, but the hedges themselves were excellently kept. Mr. Broughton has recently informed the writer that he has now arranged to pay his men entirely in "hard cash," deducting house-rent weekly, and that the majority of farmers in his district propose to adopt the same scheme. This is a very

interesting development, and one which will probably spread all over the country before very long. Competition was less keen in this class than in some others, and the Judges had no difficulty in placing Mr. Broughton at the head.

Second prize went to Mr. James Marshall, of Ham Farm, Wrazall. The farm is situated about seven miles west of Bristol, midway between that city and the seaside town of Clevedon, and may fairly be described as an ideal little place. It comprises about 96 acres, of which 82 are grass, and the management is mainly to produce milk for Bristol. The arable land was clean, and there was a fine piece of wheat, but it was not otherwise remarkable considering that practically one-half is always under a cleaning crop. The whole of the pastures and meadows contrasted very favourably with those adjacent to them, and showed what good management can do in the improvement of grass land. The thistles are well kept under, and a small uncult corner in an adjoining field showed how bad they could be. The meadow land is manured each year, and is further improved by caking sheep upon it. By laying it in early, and by mowing it early, and further, by "topping" the pastures in years of abundant growth, the weeds and some of the less useful grasses are stopped from seedling.

The dairy herd and all the young stock were a particularly fine lot to meet with on a holding of this size. The cows are good dual purpose cattle, milking and producing good steers. A Dutch bull bought cheap had been used on some of the cows a few years ago, and the Dutch steers thus got were very inferior in appearance to the Shorthorns. The bull in service was bought at Birmingham and was very handsome, but Mr. Marshall knew nothing of his breeding, and from his beef appearance the Judges remarked that there was considerable danger of his spoiling the milking properties of the herd. The cowshed and other buildings are convenient, and the fact that the farm is on the water-main is of considerable advantage in refrigerating the milk.

For pigs, Mr. Marshall likes a Tamworth cross.

Altogether a nice holding, well farmed, and wonderfully stocked.

It is not possible to draw any general conclusions as to the farming of so wide a district from the inspection of specially selected farms, nor is it within the scope of such a report as this to attempt anything of the kind, but there are two things by which the enquirer cannot fail to be impressed and which may very well be noted here. The first is only what would be expected in a review of prize-winning farms, namely the very

high standard of practical skill to which the competitors have attained in the breeding and management of their stock, and in the management of their land. The second is that the faculty for the organisation of the farm as an industry has not been developed to the same degree, and there is a certain lack of appreciation of the need for further attention to this aspect of the farmer's vocation. For example, it was no uncommon experience to be shown a grand bull, on the subject of whose pedigree the farmer would be entirely ignorant. Again, the vaguest notions frequently prevailed as to the nature and quantity of the various feeding rations, whilst, to take another illustration of what must surely be the wrong attitude of mind, a winner in one of the larger classes when asked by the Judges if he had filled up his returns for the Board of Agriculture replied with a laugh that he always threw the form straight into the waste-paper basket directly it arrived! Such things as these, together with the want of knowledge of milk yields, the absence of any system of accountancy, and so forth, are unfortunately far too general not only in the three counties to which this report refers, but also in many other farming districts, and surely before long much greater attention must be paid to them. Fortunately there are already signs of an awakening interest, and it is encouraging to note that in Somerset the milk-recording scheme which is being developed in connection with the Board of Agriculture's livestock improvement proposals has already become very popular, and herds representing some 2,000 cows are coming into the scheme. This is evidence of the spirit of enquiry which is one of the greatest assets of the farmer.

The writer desires to acknowledge the very great assistance afforded to him in the compilation of this report by the Judges, Mr. W. Nunnerley, of Kenwick, Ellesmere, Salop, and Mr. T. L. Walker, of Ankerdene, Knightwick, Worcester, and also by his friend, Mr. K. J. J. Mackenzie, of the School of Agriculture, University of Cambridge.

C. S. ORWIN.

Institute for Research in Agricultural Economics,
University of Oxford.

REPORT OF THE COUNCIL TO THE
ANNUAL GENERAL MEETING OF GOVERNORS
AND MEMBERS OF THE SOCIETY,
HELD AT THE ROYAL AGRICULTURAL HALL, ISLINGTON, N.,
On WEDNESDAY, December 10, 1913, at 12.15 p.m.

THE EARL OF NORTHBROOK (*President*) in the Chair

The Council have to report that the list of Governors and Members has undergone the following changes during the year which has elapsed since the Annual General Meeting on December 11th, 1912: 13 new Governors (including 4 transferred from the List of Members under By-law 7), and 694 new Members have joined the Society, 6 Members have been re-instated under By-law 14, and 1 "Research" Life Member has been elected by the Council; whilst the deaths of 3 Life Governors, 7 Governors, 2 Honorary Members, 94 Life Members, and 132 Annual Members have been reported. A total of 39 Members have been struck off the books under By-law 12, owing to absence of addresses; 1 Governor and 80 Members under By-law 13, for arrears of subscription; and 225 Annual Members have resigned.

It is with regret that the Council have to record that since the beginning of the year the losses by death sustained by the Society have included one Vice-President (Sir Richard Cooper, Bart.), one Member of Council (Mr. Henry Herbert Smith), and two ex-members of the Society's executive body (Mr. Joseph Martin and Lord Arthur Cecil).

The message announcing the death of Sir Richard Cooper on the 30th July was received at Bedford Square at the conclusion of the ordinary business of the Council meeting held that morning, and, in reporting the sad event to his colleagues, the President said the news had come upon him with terrible suddenness, for, although he had heard that Sir Richard was unwell, he had no idea that his condition was so grave. Sir Richard, who joined the Society in 1899, was elected to the Council in 1905 as the representative of the Division of Staffordshire, and was appointed a Vice-President in July, 1910. Besides being a regular attendant at the Council meetings, he served on several of the principal committees, in the deliberations of which he took the keenest interest, and was a Steward of Finance at the Annual Show. In these, and also in many other directions, he rendered valuable assistance to the Society. Sir Richard will also be remembered as a large breeder of pedigree stock, animals from his herds and flocks being exhibited regularly, and with much success, both at home and abroad.

Mr. Henry Herbert Smith, of Bowood, Calne, who died suddenly on the 19th October, had been a member of the Society since 1874, and from 1905 until his death he represented the Division of Wiltshire on the Council. From 1900 to 1903 Mr. Smith was Gilbey Lecturer on the history and economics of Agriculture at Cambridge University.

Mr. Joseph Martin, of Littleport, Ely, who died at the age of 84, became a member of the Society in 1870. Four years later he was elected to the Council, on which he continued to serve for more than thirty years. Although he resigned his seat in 1905, Mr. Martin still maintained his interest in the Society, and he regularly attended the General Meetings of members, being present at the last Annual Meeting in December, 1912.

Lord Arthur Cecil, who died in July last, joined the Society as a Member in 1873, and in 1898 was elected to a seat on the Council, a position which he retained until the year 1903.

Amongst other Governors and Members whose loss by death, since the last Annual Meeting, the Society has to deplore, are H.I.H. Prince Arisugawa of Japan (Honorary Member), the Duke of Abercorn, K.G., the Duke of Sutherland, K.G., (Gov.), the Marquis of Northampton, K.G., the Earl of Ashburnham, the Earl of Belmore, G.C.M.G., the Earl of Crawford, K.T., Earl Nelson, K.C.M.G., Viscount Lifford, Viscount Sidmouth, Viscount Tredegar, Lord Gorell, Lord Macnaghten, G.C.B., G.C.M.G., Lord Stafford, the Right Hon. George W. Palmer, the Hon. H. L. Courtenay, Capt. the Hon. H. B. Hawke, His Excellency the Hon. Whitelaw Reid (Honorary Member), Sir Walter Chaytor, Bart., Sir Tatton Sykes, Bart., Sir George Wombwell, Bart., Sir Edwin T. Ann (Gov.), Sir Alfred Apperly, Lieut.-Col. Sir F. A. T. Clayton, K.C.V.O., Sir Clement Lloyd Hill, K.C.B., K.C.M.G., M.P., Col. R. J. Aspinall, Mr. Caleb Barker, Mr. F. J. Batchelor, Mr. Nathaniel Benjafield, Mr. Riley Briggs, Mr. Robert Burra, Mr. Peter Coats, Mr. Nathaniel L. Cohen, Mr. John Cooper, Col. C. J. Cotes, Mr. Frederick Cox (Gov.), Mr. Julius A. Fricker, Mr. A. M. Gordon (Newton), Mr. Henry Grinling, Mr. John Lister Hall, Mr. W. H. Heywood, Col. Thomas A. Irwin (Gov.), Capt. A. Glen Kidston, Mr. R. O. Lamb (Gov.), Mr. Joseph Lee (Congalton), Mr. J. Pierpont Morgan, Mr. T. S. Morgan, Mr. W. C. T. Mynors, Mr. Percy B. Neame (1858), Mr. George Neve (1855), Mr. C. D. Nicholson, Mr. Allen Ransome, Mr. James E. Reiss (Gov.), Mr. R. H. Ridler (1862), Mr. Matthew Ridley, Mr. Hugh C. Rigg, Mr. T. Rigg, Mr. Henri Rivière, Mr. J. P. Sheldon, Col. Frank Shuttleworth, Mr. Alfred Stanford, Mr. James Woolley Summers, M.P., Mr. William Taylor (Park Mains, Renfrew), Mr. H. S. Tett, Mr. Frederick Verney, and Mr. Edward Webb.

The above, and other changes, bring the total number of Governors and Members now on the Register to 10,434 divided as follows:—

- 171 Annual Governors;
- 89 Life Governors;
- 7,448 Annual Members;
- 2,698 Life Members;
- 28 Honorary Members;

10,434 Total number of Governors and Members, as against a total of 10,307 Members on the Register at the time of the last Annual Report.

In recognition of his services to agriculture, the Council, at their meeting in May last, elected as an Honorary Member the Hon. James Wilson, who, for a period of sixteen years was Minister of Agriculture at Washington, U.S.A. Advantage was taken by the President of the presence of Mr. Wilson at Bristol to present his Diploma of Honorary Membership to him personally at the General Meeting held on the Showground.

Since the last Annual Meeting, Mr. John Evens, of Burton, Lincoln, has been elected as a Member of Council for the Division of Lincolnshire, in the room of the late Mr. Henry Dudding. A vacancy in the list of Vice-Presidents, created by the death of Sir Richard Cooper, has been filled by the election of Lord Rothschild.

Following the regular scheme of rotation, the Members of Council representing the electoral districts of Group "B" retire at the Annual Meeting in December next. The usual steps have been taken for the election or re-election of representatives for the several divisions concerned. In the electoral district of Hampshire—owing principally to the efforts of the Earl of Northbrook during his year of Presidency—the number of Governors and Members on the 1st August last had increased to 321, so that that Division is now entitled, under By-law 83, to elect another representative in addition to Mr. James Falconer.

In accordance with the By-laws, the balance-sheet has to be presented for consideration at the Annual General Meeting. The Council therefore beg to submit the balance-sheet for the year 1912, with the Statement of Ordinary Income and Expenditure. These accounts were published in Volume 73 of the Journal issued to Members early this year, having been duly examined and certified as correct by the Auditors appointed by the Members, and by the professional Accountants employed by the Society.

On the motion of Sir Ailwyn Fellowes, seconded by Mr. Mansell, the Council at their meeting in February, passed a Resolution in the following terms:—

That the President of the Board of Agriculture be asked to approach the various Colonial and Foreign Governments with a view to a modification of the existing import regulations so as to allow cattle, sheep, and pigs to be exported from Great Britain, provided they have come from a clean zone, and not from within a radius of thirty miles of any place where foot-and-mouth disease has existed for two months.

Subsequently, in the following month, a deputation consisting of representatives of the Royal Agricultural Society, the National Cattle Breeders' Association, and the National Sheep Breeders' Association, waited upon the President of the Board of Agriculture at the House of Commons, with reference to the regulations affecting the importation of cattle, sheep, and pigs from Great Britain to the Colonies and foreign countries. The deputation were received in a very sympathetic manner by Mr. Runciman, who, they realised, was fully cognisant of the importance of the subject, and that both he and the Board of Agriculture were doing everything they could to meet the wishes of the stockowners of this country.

The seventy-fourth Annual Exhibition held at Bristol in the first week of July, as on the occasion of the Society's previous visit to the city, was a great success in every respect. All the usual departments of the Show were well supported, and in addition several new features were introduced. Chief of these was the special section devoted to exhibits from the British Dominions overseas, an innovation which owed its inception to the Local Committee at Bristol. The exhibits in this portion greatly interested His Majesty the King, when he visited the Show on the Friday, the first One Shilling day. His Majesty, who travelled down from London that morning, arrived at the Showyard about 1 p.m. After inspecting a number of naval and military veterans the King honoured the President with his company at luncheon in the Royal Pavilion. Later, His Majesty made a tour of the Showground, leaving his carriage several times to inspect particular exhibits. The King appeared much interested in all he saw, and on leaving expressed to the President the great pleasure his visit had given him. Lord Northbrook subsequently received the following letter:—

Buckingham Palace,
July 5th, 1913.

DEAR LORD NORTHBROOK,—The King desires me once more to express his satisfaction with the excellent arrangements made in connection with yesterday's visit to the Royal Agricultural Show. His Majesty realises the care and thought that you, Sir Gilbert Greenall, and the stewards and members of the various committees must have given to the organisation of all the details, and is glad to think that the Society can congratulate itself on an eminently successful show during the term of your Presidency. It was a happy inspiration to include among the exhibits a display of products of the Overseas Dominions, which gave the public an opportunity of gaining some knowledge of the agricultural conditions of the various parts of the Empire. The King has carried away a pleasing impression of his visit, and of the very warm and enthusiastic welcome given to him by all present.

Believe me, yours very truly,
(Signed) CLIVE WIGRAM.

The Society are much indebted to the Lord Mayor and Corporation of Bristol, and also to the excellent Local Committee, who spared no effort on their part to ensure the success of the Show. Reference should also be made to the hospitality of the Lord Mayor (Mr. Councillor C. J. Lowe), the Society of Merchant Venturers and other citizens of Bristol, and to the kindness of the Commoners and inhabitants generally for permitting the Society to occupy a portion of the Downs, which afforded such a beautiful site for the Show. The Council desire to record their appreciation of the action of the Gloucestershire Agricultural Society, who, as on the occasion of the visit to Gloucester in 1909, voluntarily decided to give up their Show for the year.

Fine weather attended the Show throughout, and the total number of visitors who paid for admission during the week was 179,148. From the Show Accounts, which will be presented to Members at the Annual Meeting, it will be seen that the balance of receipts over expenditure is £3,115 ls. 7d.

By the courtesy of Messrs. Bolckow, Vaughan & Co., the trials of Milking Machines arranged by the Society were carried out at Grange Hill Farm, Bishop Auckland, in the month of April last. Ten machines were submitted for trial, as the result of which the First Prize (Gold Medal and £25) was awarded to Mjolkningmaskin Omega, of Flen, Sweden, for their machine "The Omega," and the Second Prize (Silver Medal and £10) to Messrs. Vaccar, Limited, of 7, Denman Street, London, S.E. The official report on the Trials has been published at the price of One Shilling, and copies may be obtained on application to the Secretary.

Prizes were also offered by the Society this year for "hand power machines for applying dry insecticides or fungicides in powder form to bushes and trees." Seven of the eight machines entered competed in the trials, which, by kind permission of the authorities of the University of Bristol, were held, in May, at the Agricultural and Horticultural Research Station, Long Ashton, Bristol. The First Prize of £10 was awarded to Messrs. F. W. Moellenkamp & Co., 85, Farringdon Street, London, E.C., and the Second Prize of £5 to Messrs. Pilter & Co., 22, Bush Lane, London, E.C.

Next year's Show will be held at Shrewsbury from Tuesday, June 30th to Saturday, July 4th, and, in consequence of the Society's visit, the Shropshire and West Midland Agricultural Society have agreed not to hold their Show in 1914.

The Earl of Powis having signified his willingness to accept nomination as President of the Society for next year, when the Show will be held at Shrewsbury, the Council have unanimously decided to recommend his Lordship's election to that office at the Annual Meeting in December.

In connection with the Shrewsbury Show, prizes amounting to £470 have been offered by the Local Committee in the following Classes, for the best managed farms in Shropshire, Montgomeryshire and Staffordshire:—

CLASS I.—Grazing or Dairy Farm, 150 acres or over (exclusive of Sheep Run), of which two-thirds must be permanent grass. First Prize, £75; Second Prize, £50; Third Prize £20. (13 entries.)

CLASS II.—Grazing or Dairy Farm, not less than 50 acres and under 150 acres (exclusive of Sheep Run), of which two-thirds must be permanent grass. First Prize, £50; Second Prize, £30; Third Prize, £10. (5 entries.)

CLASS III.—Farm, chiefly Arable, 150 acres or over (exclusive of Sheep Run). First Prize, £75; Second Prize, £50; Third Prize, £20. (13 entries.)

CLASS IV.—Farm, chiefly Arable, not less than 50 acres and under 150 acres (exclusive of Sheep Run). First Prize, £50; Second Prize, £30; Third Prize, £10. (6 entries.)

Entries in the above competition closed on the 1st September, and the Judges made their preliminary tour of inspection in October last.

At their meeting in November last the Council agreed to proposals made by the Finance Committee for the offer, through local societies, of Rewards for Skilled Agricultural Labour and Long Service under the following conditions:—

- (1) Rewards will be given for the encouragement of Skilled Agricultural Labour and Long Service, *i.e.*:—
 - Sheep Shearing,
 - Hedging,
 - Ditching,
 - Draining,
 - Ploughing,
 - Thatching,
 - Long Service, etc., etc.
- (2) Awards may be given each year in the area visited by the Show; provision being made for other districts which have not been visited by the Society for a considerable period.
- (3) County and Local Societies are asked to co-operate in the distribution of such awards as the Royal Agricultural Society may annually decide upon.
- (4) In the area visited by the Society, the district covered by the Farm Prize Competition is to be taken as the basis. Local Societies on the border of counties will be considered to be within the area of that county which contains the largest proportion of their district.
- (5) The Farm Prize Committee will deal with the matter, and will be empowered to form a Sub-Committee for the purpose, on which local representatives may be co-opted.
- (6) All Societies desirous of participating in this scheme must be approved by the Royal Agricultural Society and registered at their office.
- (7) Championship Awards may be given to be competed for by winners of the Royal Agricultural Society's awards at the Local Competitions.

The Schedule of Prizes for Live Stock, Poultry, Produce, etc., at the Shrewsbury Show will be issued early in the new year. The Shrewsbury Local Committee have promised a handsome contribution of £2,188 towards the prizes, and as the Show will be held in the district of Welsh Ponies, Hereford Cattle, Welsh Cattle, Shropshire Sheep, Kerry Hill (Wales) Sheep and Welsh Mountain Sheep, an extended Classification will be provided for each of these breeds. In the Riding Pony section a new feature will be two classes for Children:—(1) For a Pony to be ridden by a child born in or after 1902; (2) for a Pony to be ridden by a child born in or after 1900.

Offers of Champion and other prizes have been received from the following Breed Societies:—Shire Horse Society, Clydesdale Horse Society, Hunters' Improvement and National Light Horse Breeding Society, Hackney Horse Society, National Pony Society, Shetland Pony Stud Book Society, Welsh Pony and

Cob Society, Shorthorn Society, Dairy Shorthorn (Coates's Herd Book) Association, Lincolnshire Red Shorthorn Association, Hereford Herd Book Society, Devon Cattle Breeders' Society, South Devon Herd Book Society, Longhorn Cattle Society, Sussex Herd Book Society, Welsh Black Cattle Society, Red Poll Cattle Society, Aberdeen Angus Cattle Society, English Aberdeen Angus Cattle Association, Galloway Cattle Society, British Holstein Cattle Society, English Jersey Cattle Society, English Guernsey Cattle Society, English Kerry and Dexter Cattle Society, Shropshire Sheep Breeders' Association, South-down Sheep Society, Hampshire Down Sheep Breeders' Association, Suffolk Sheep Society, Dorset Horn Sheep Breeders' Association, Ryeland Flock Book Society, Kerry Hill (Wales) Flock Book Society, Lincoln Long Wool Sheep Breeders' Association, Leicester Sheep Breeders' Association, Wensleydale Blue-faced Sheep Breeders' Association, Kent or Romney Marsh Sheep Breeders' Association, Cotswold Sheep Society, Dartmoor Sheep Breeders' Association, Exmoor Horn Sheep Breeders' Association, Breeders of Cheviot Sheep, Breeders of Herdwick Sheep, Welsh Mountain Flock Book Society, National Pig Breeders' Association, Lincolnshire Curly Coated Pig Breeders' Association.

The following offers have also been received from Members of the Society:—

£180 towards the Hunter Classes.

£30 towards the Polo Pony Classes.

Two prizes of £10 each to the Breeders of the Champion Male and Female Shorthorn.

£40 for two classes for Shorthorn Dairy Cattle not eligible for Coates's Herd Book or the Lincolnshire Red Shorthorn Herd Book.

£100 towards the Milk Yield prizes.

Fifty Guinea Gold Challenge Cup for the best Park Hack or Riding Pony.

Fifty Guinea Gold Challenge Cup for the best Four-in-hand Team.

The following Challenge Cups are again also offered:—

£50 Silver Cup for the best Suffolk Stallion.

Fifty Guinea Gold Cup for the best Hunter Riding Mare or Gelding.

Fifty Guinea Gold Cup for the best Single Harness Horse in the Novice Classes.

Fifty Guinea Gold Cup for the best Single Harness Horse.

Fifty Guinea Gold Cup for the best Pair of Harness Horses.

Fifty Guinea Gold Cup for the best Tandem.

Fifty Guinea Cup for the best Group of Dairy Shorthorns.

£20 Silver Cup for the best Animal in the South Devon Cattle Classes.

£15 Silver Cup for the best Longhorn Bull or Cow.

£15 Silver Cup for the best Longhorn Yearling Bull or Heifer.

Twenty-five Guinea Silver Cup for the best Animal in the Kerry Classes.

Twenty-five Guinea Silver Cup for the best Animal in the Dexter Classes.

Sixty Guinea Silver Cup for the best Border Leicester Ram or Ewe.

Twenty Guinea Silver Cup for the best Large Black Sow.

In the Poultry section Special Prizes are being contributed by the following Clubs:—The White Plymouth Rock Club, the Croad Langshan Club, the Partridge Wyandotte Club, the Buff Orpington Club, the White Orpington Club, the Black Orpington Club, the Spangled Orpington Club, the Sussex Poultry Club,

the Yokohama Club, the Malines Poultry Club, the Japanese Bantam Association, the Campine Club, and the Buff Orpington Duck Club. The Blue Orpington Club have guaranteed four classes for Blue Orpingtons and the White Turkey Club two classes for White Turkeys.

In the Produce section Classes and Prizes will be provided for Butter, Cheeses made in 1914, Cider and Perry, and two new features will be the offers of Prizes for Bottled Fruits and for Bacon and Hams. The Bottled Fruits Classification has been arranged so as to include competition by both the large grower and the smallholder. The fruit must have been grown in the United Kingdom. In the Bacon and Hams Classes the Exhibitor must be the curer and *bona fide* owner of the pigs from which the Bacon and Hams respectively are taken. The pigs must be bred in the United Kingdom and either be entered or eligible for entry in their respective Herd Books, or must be the produce of the first cross of pedigree pigs.

With regard to the Wool Classification it has been decided to discontinue the Classes for "Any Short Wool," "Any Long Wool," and "Mountain or Moorland Wool," and to include separate Classification for Wool of the respective Breeds whose Breed Societies desire their inclusion in the Prize Sheet.

The British Bee Keepers' Association will continue their Prizes for Hives, Honey and Bee Appliances.

There will be the usual Competition of Shoeing Smiths in three Classes, viz. :—Hunters, Roadsters and Cart Horses. The Worshipful Company of Farriers have again kindly offered to present a Gold Medal to the First Prize Winner in each Class, and the National Master Farriers' Association will give a Silver and Bronze Medal in each Class.

Competitions in Butter-Making will be held in the Dairy in the Showyard on Tuesday, Wednesday, Thursday and Saturday of the Show.

The Competitions will be open only to those resident in Shropshire, Staffordshire, Cardiganshire, Radnorshire and North Wales, who have been pupils or received instruction in Dairying at their respective County Council Institutes or Dairy Schools since the first day of January, 1911, and who have not, previous to the 30th May, 1914, won a prize in an open class at the Shows of the R.A.S.E., Bath and West and Southern Counties Society, Royal Counties Society, or at the London Dairy Show.

The Society have decided to forego their Horticultural Exhibition, owing to the influential Horticultural Society existing at Shrewsbury and whose Annual Exhibition will be held in 1914.

To replace the Horticultural section an Exhibition of Trees and Shrubs named in the Hand List of Trees and Shrubs issued by the Royal Botanical Gardens, Kew, will be held.

It is hoped that the Trade and those interested in Arboriculture will support the intended Exhibition and prepare exhibits of pot plants within the Kew Schedule of Trees and Shrubs.

The Shropshire and West Midland Agricultural Society with the National Terrier Club will hold their Dog Show in the Show-yard on the Thursday and Friday, July 2nd and 3rd.

An Agricultural Education and Forestry Exhibition will be held on the same general lines as those of previous years.

The Plantations and Nurseries Competition—to be organised in conjunction with the Royal English Arboricultural Society—will next year be restricted to the counties of Shropshire, Staffordshire, Radnorshire and Montgomeryshire.

As already announced, the Shows of the Society after next year will be held as follows:—At Nottingham in 1915; at Manchester in 1916; and at Cardiff in 1917.

The samples analysed for Members in the Society's laboratory have been just about the same in number as in 1912, the total being 393 as against 426. In addition there were 191 samples of milk and 40 samples of cider analysed in connection with the Society's Show at Bristol.

Taking the analytical work as a whole, it has tended to show that there is a decrease in the practice of adulteration, and cases of misrepresentation and overcharge are less frequent. Only one private circular referring to a case of fraud has been issued to Members during the year.

The work at the Woburn Experimental Station continues to expand. This has so far been recognised that a grant of £500 was made during the year from the Development Fund in aid of the experimental and research work carried on. The Station has been visited frequently, both by individuals and by parties of agriculturists. Among the latter may be named, the Glamorgan County Council, the Northampton Chamber of Agriculture, County Lecturers of the West of Scotland Agricultural College, and local farmers. On July 22nd the Members' annual visit took place, 64 being present, and on July 31st the Council made their annual inspection, accompanied by representatives of the Board of Agriculture, the Lawes Agricultural Trust, etc. On this occasion the Rt. Hon. Walter Runciman, President of the Board of Agriculture, together with the Secretary of the Board, Sir Sydney Olivier, the late Secretary, Sir Thos. Elliott, Mr. R. H. Rew, and others were present. The covering-in of the yard at the Farm buildings has been completed, and extensive improvements have been made in the Farm Manager's residence.

As regards the field experiments, in addition, to those on continuous wheat and barley, the rotation and green-manuring experiments have been further carried on, as well as work on varieties of oats, varieties of lucerne, clover and grass mixtures, linseed, soya bean, etc.

The early part of the season was a very trying one, but, on the whole, wheat did better than in 1912; the harvesting of barley was considerably delayed, but the crop was about the same as in 1912. Of the varieties of oats tried, "Banner" (Canadian) promises to be the best, and of lucerne, the Russian (European) variety. Excellent crops of hay and of "seeds"

were obtained, the latter comprising a trial of "wild white" clover and "wild red" clover. The root crop, though suffering greatly at first owing to drought, in the end, through keeping the land constantly stirred and obtaining a very fine tilth, yielded capital crops (for this light land) of both mangels and swedes. At the Pot-culture Station, in addition to a continuation of the work on lime and magnesia, the principal fresh research was on the action of copper, zinc and manganese salts on the wheat plant, and of Lithium salts on tomatoes.

The practical demonstration of the eradication of wild onion by the growing of deep-rooting grasses and plants was clearly shown at Chelsing, Herts, the results of the system adopted being this year very marked.

An experiment on calf-rearing has given rise to much interest, and is being continued. The cattle, now 19 months old, are being fattened off. Meanwhile, a fresh experiment, on exactly the same lines, but with autumn calves instead of spring calves, has been begun.

During the year 196 complete analyses, that is for purity and germinating capacity, and 74 rough analyses and comparisons of bulks with samples, were made. Seeds of mangels and sainfoin proved unusually bad, and the germination of English grown clover lower than usual. Many of the clover samples consisted of discoloured, shrivelled seed, which, however, germinated more satisfactorily than its appearance led one to expect. The best samples appear to have been yearling seed. White clover, alsyke, and the various grass seeds, on testing, showed results well up to the average. A large number of enquiries with regard to weeds were dealt with. No fewer than ten of these referred to the common spurrey which appears to have been excessively prevalent on light soils this season. Arrangements have been made to carry out experiments on methods of eradicating it since the addition of lime to the soil has not always given satisfactory results. Two bad outbreaks of clover dodder were checked by spraying the infected areas with a very dilute solution of an arsenical weed-killer. Fewer enquiries than usual as to fungi were received, the total number being only 22. The outbreaks do not appear to have been particularly serious with the exception of an attack of bunt in wheat where the infection was so severe that the total destruction of the crop had to be recommended. Tobacco figured for the first time on our list, but the cause of the disease could not be ascertained with any certainty. Eight prescriptions for mixtures for the formation of permanent pasture were drawn up, and three analyses of mixtures made. One of these mixtures, said to be a cheap one, was found to contain about one per cent. of seeds useful for the purpose, the remaining being weeds and the screenings of a wheat crop. General enquiries have been more interesting and numerous than in former years. Some of the more important referred to the following subjects: Damage caused to crops by fumes from a colliery; method of preventing the growth of algae in ornamental waters; the seeding capacity of thistles; impurities in feeding stuffs; the extermination of moor-grass and "blindness" in barley.

On the 6th May last, a deputation waited upon the President of the Board of Agriculture on the subject of the proposed establishment in England of a National Seed Testing Station. In addition to the Royal Agricultural Society there were also represented the London Chamber of Commerce, the Central Chamber of Agriculture, the Agricultural Seed Trade Association, and the British Sugar Beet Council. Lord Desborough introduced the deputation, and the position of the Royal Agricultural Society with regard to the question was explained by Mr. C. Coltman Rogers (Chairman of the Society's Botanical and Zoological Committee). The views of the other bodies were also stated by their representatives, and Mr. Runciman kindly undertook to give the matter his consideration.

Advice has been given to Members during the past year in a large number of cases of insect attack; obscure points in the life-history of certain pests have been investigated; and numerous zoological specimens have been received for identification. The mild winter of 1912-13 led to the early appearance of many pests, and, with the cold dry early summer, gave weather conditions very favourable to certain kinds of injurious insects, so that the Zoological Department was kept particularly busy during the first six months of the year. Various Aphis attacks were especially severe, and one, that of the Spruce Aphis, occurred to an extent not previously recorded in this country, and much attention was devoted to it. The study of the life-history of the Raspberry Beetle has been brought to a conclusion, and important observations have been made on the habits of other pests.

The outbreaks of anthrax confirmed by the Board of Agriculture during the year show a marked decline as compared with the previous year. The reported outbreaks of glanders have been slightly fewer than during the previous year, but there has been a slight increase in the number of animals attacked. The decline in the prevalence of sheep scab which began to show itself in 1911 has been continued throughout the current year. Unfortunately, the position with regard to swine fever remains unsatisfactory, although the reported outbreaks during the current year are somewhat fewer than in 1912. Parasitic mange in horses still appears to be widely prevalent. The country has been quite free from foot-and-mouth disease throughout the year.

The experiments which were begun at Woburn early in 1911 for the purpose of demonstrating that by means of isolation it is possible to rear healthy stock from tuberculous parents have been brought to a close. One of the experimental animals was killed in December last and the others in the course of the present year. After slaughter a searching post-mortem examination was made, but no evidence of tuberculosis was found in any case. A full account of the experiments will be published later.

On the recommendation of the Veterinary Committee, the Council last year appointed a Sub-Committee, under the Chairmanship of the Earl of Northbrook, "to consider questions

arising out of reports on the diseases of animals in the United Kingdom and other questions connected therewith." The Sub-Committee decided, in the first place, to deal with Swine Fever, and they have met several times and had interviews with gentlemen interested in pig breeding or connected with the bacon-curing industry. A Report on the subject of their inquiry has been prepared, and this will be presented to the Veterinary Committee at their meeting in December.

At the Tenth International Congress of Agriculture held this year at Ghent the Society was represented by Mr. Alfred Mansell.

As the result of the examination at the Royal Veterinary College for the Society's Medals for proficiency in Cattle Pathology, including the diseases of Cattle, Sheep and Pigs, the Silver Medal has been awarded to Mr. H. W. Dawes, Camden House, West Bromwich, and the Bronze Medal to Mr. A. A. Pryer, North House, Bishop's Stortford.

For the Gold Medal for Original Research in Agriculture offered this year only two entries have been received, and the Referees' award will be announced at the General Meeting in December.

The trustees of the "Queen Victoria Gifts" Fund have made a grant of £140 for the year 1913 to the Royal Agricultural Benevolent Institution, to be distributed as fourteen grants of £10 each to the five male candidates, five married couples, and four female candidates who polled the largest number of votes in their class, and who would not this year receive grants from any other fund in connection with the Royal Agricultural Benevolent Institution.

The Fourteenth Annual Examination for the National Diploma in Agriculture was held at the Leeds University from the 19th to the 25th April last, when thirty-four candidates were successful in obtaining the Diploma, the first three gaining Honours. For list see pp. 338 and 339.

The Examination for the National Diploma in Dairying was held this year for English students from September 13th to 19th at the British Dairy Institute and University College, Reading; and for Scottish students from September 19th to 26th, at the Dairy School for Scotland, Kilmarnock. Thirty-three candidates were examined at the English Centre, of whom twenty-two were successful, and at the Scottish Centre thirty-six candidates were examined, of whom twenty-four passed. The names of the Diploma winners will be found on pp. 342 and 343.

By Order of the Council,

THOMAS MCROW,

Secretary.

16, BEDFORD SQUARE, LONDON, W.C.,
November 5th, 1913

NATIONAL AGRICULTURAL EXAMINATION BOARD.

I.—REPORT ON THE RESULTS OF THE FOURTEENTH EXAMINATION FOR THE NATIONAL DIPLOMA IN AGRICULTURE,

HELD AT LEEDS, APRIL 19 TO 25, 1913.

1. THE Fourteenth Examination for the NATIONAL DIPLOMA IN AGRICULTURE was held by the courtesy of the authorities, at the University of Leeds from the 19th to the 25th April last.

2. The Regulations and Syllabus were similar in all respects to those introduced for the first time last year. Each candidate was required to present a certificate from a recognised agricultural college that his attainments in the subjects of General Botany, Geology, General Chemistry, Physics and Mechanics, as attested by class and other examinations were, in the opinion of the authorities of his college, such as to justify his admission to the Examination; or to produce other evidence of equivalent attainment. The subjects of Examination were Practical Agriculture (two papers), Farm and Estate Engineering (including (a) Surveying, (b) Farm Buildings, (c) Machinery and Implements), Agricultural Chemistry, Agricultural Botany, Agricultural Book-keeping, Agricultural Zoology, and Veterinary Science. Under the Regulations, the whole eight papers may be taken at one time, or a group of any four in one year and the remaining group of four in the year following. Candidates taking the whole Examination in one year who fail in two subjects only are allowed to take those subjects alone in the succeeding year. Candidates failing in a single subject of a group are permitted to take this again in conjunction with the second group.

3. The total number of candidates examined this year was 112, and was greater than on any former occasion. Twenty-three of these presented themselves under the old Regulations, and 89 under the Regulations which came into force last year.

4. Of the 23 candidates who were this year, by special permission, completing the Examination under the conditions in force up to 1912, 14 were taking the five subjects of the old Part II. (consisting of Practical Agriculture, Agricultural Book-keeping or Mensuration and Land Surveying, Agricultural Chemistry, Agricultural Engineering, and Veterinary Science), and nine who had previously failed in only one subject of Part II. came up for that subject alone. As the

result of the Examination, 17 of these 23 candidates (including eight of the nine who were taking a single subject) were awarded the Diploma, one candidate gaining Honours.

5. Of the 89 examined under the *new Regulations*, 27, who had passed certain of the subjects in 1912, were taking the remaining portion of the Examination, and six candidates sat for the whole eight papers; the other 56 came up for a group of four subjects.

6. Seventeen candidates—including two of the six taking the whole Examination at a sitting—were successful under the new Regulations in obtaining the Diploma—two with Honours.

7. In the following list the candidates gaining Honours are placed in order of merit according to the percentage of the aggregate marks obtained, and the names of the ordinary Diploma-winners are given in alphabetical order. In all cases the candidates who took the Examination under the old Regulations are marked with an asterisk.

Diploma with Honours.

1. THOMAS BEATON MANSON, Glasgow University and West of Scotland Agricultural College.
- *2. CHARLES WILLIAM GOODE, University of Leeds.
3. JOHN DARE POWELL, Harper-Adams Agricultural College, Newport, Salop.

Diploma.

- *THOMAS WILLS ARNETT, Durlawn, Wadebridge, Cornwall.
 *LEONARD ASHWORTH, Midland Agricultural and Dairy College, Kingston, Derby.
 *WILLIAM JAMES BORLASE, Gweal-an-vellan, Hayle, Cornwall.
 JOHN WILLIAM BROWNE, Royal College of Science, Dublin.
 ALFRED CHESHER CAMPBELL, West of Scotland Agricultural College, Glasgow.
 JAMES COCHRANE, West of Scotland Agricultural College, Glasgow.
 RICHARD BASIL COMELY, Royal Agricultural College, Cirencester.
 *GEORGE THEODORE FINDLAY, Aberdeen University.
 HAROLD HENRY GARDNER, Harper-Adams Agricultural College, Newport, Salop.
 THOMAS GILLILAND, West of Scotland Agricultural College, Glasgow.
 *ROBERT HART, University College, Reading.
 THOMAS ROBINSON HEWITT, Royal College of Science, Dublin.
 HAROLD EDWIN HIPPISEY, Royal Agricultural College, Cirencester.
 THOMAS ALFRED HOLE, University College, Reading.
 ALBERT BENTLEY HYDE, Harris Institute, Preston.
 RICHARD IBISON, Harris Institute, Preston.
 RICHARD HENRY BISHOP JESSE, B.Sc., Birmingham University.
 WILLIAM KIRKPATRICK, West of Scotland Agricultural College, Glasgow.
 *ROLAND WHITELAW LITTLEWOOD, University of Leeds.
 THOMAS LAMBERT MASHETER, Harris Institute, Preston.
 *EDWARD MILLER MELVILLE, Glasgow University and West of Scotland Agricultural College.
 *THOMAS GERRARD PARKES, Harper-Adams Agricultural College, Newport, Salop.

- ¹FRANK RAYNS, Midland Agricultural and Dairy College, Kingston, Derby.
 *WILLIAM GERALD SANDERCOCK, Kea Villa, Kea, Truro.
¹GEOFFREY TALBOT, Harris Institute, Preston.
 *HARRY RANDOLPH TAYLOR, Harris Institute, Preston.
 JOSEPH SHEPHERD TOWERS, Harris Institute, Preston.
 *ROBERT HENRY FRANCOIS WALLING, Armstrong College, Newcastle-on-Tyne.
 *ALBERT WATSON, University of Leeds.
 *GEORGE WHITTAKER, Harper-Adams Agricultural College, Newport, Salop.
 *HUGH ALEXANDER WYLLIE, Glasgow University and West of Scotland Agricultural College.

8. Of the 56 candidates who were examined in four subjects, the following 26 were successful in passing, and are therefore entitled to take the second group in the year 1914 :—

- ARCHIBALD ALLAN, West of Scotland Agricultural College, Glasgow.
 LIONEL RAYMOND ALLEN, Harper-Adams Agricultural College, Newport, Salop.
 ROBERT WALLACE BROWN, West of Scotland Agricultural College, Glasgow.
 REGINALD GEORGE BURN, University of Leeds.
 LEONARD E. S. EASTHAM, Harris Institute, Preston.
 ERIC WILLIAM FIELDS, University of Leeds.
 HARRY HARRIES, Brynlefrith, Owmlynnfell, Swansea Valley.
 FLOWERS LEONARD KIRK, Midland Agricultural & Dairy College, Kingston, Derby.
 JOHN GARDEN LAMB, Aberdeen University.
 HAROLD LESTE, Royal Agricultural College, Cirencester.
 GEORGE LYALL, West of Scotland Agricultural College, Glasgow.
 HARRY MUIR MCCREATH, West of Scotland Agricultural College, Glasgow.
 JOHN MILLER, West of Scotland Agricultural College, Glasgow.
 HAMO NEWTON PERCIVAL, Harris Institute, Preston.
 GEORGE FREDERICK PILLING, Harris Institute, Preston.
 CLIFFORD WILLIAM ROWELL, Agricultural College, Uckfield, Sussex.
 GLEN RUSSELL, Glasgow University and West of Scotland Agricultural College.
 ROGER SAYCE, Harris Institute, Preston.
 WILLIAM SHORE, Harris Institute, Preston.
 CHARLES LIONEL SILVESTER, Harper-Adams Agricultural College, Newport, Salop.
 JAMES STRACHAN, Aberdeen University.
 WILFRID HERBERT TYNE, University of Leeds.
 ROBERT WATSON, Aberdeen University.
 FRANK WHITTAKER, Harris Institute, Preston.
 ROBERT WISHART, West of Scotland Agricultural College, Glasgow.
 HUGH MAIR YOUNG, West of Scotland Agricultural College, Glasgow.

9. Of the remaining 30 candidates, 16 failed in only one subject of the four for which they sat, and they will therefore be permitted to take that subject in conjunction with the second group next year.

10. The Reports of the Examiners in the different subjects are appended :—

PRACTICAL AGRICULTURE. Mr. T. A. Dickson, Mr. John Gilchrist, F.S.I., and Professor W. Somerville, M.A., D.Sc.

Old Regulations (Part II), 500 Marks.

New Regulations { First Paper, 300 Marks.
 Second Paper, 300 Marks.

The Examiners are satisfied with the general standard of knowledge displayed by the candidates, though a certain number had evidently small experience of actual agricultural operations. While the Examiners expect that a candidate will show most detailed acquaintance with the farming of some particular district, they think that the

holder of a National Diploma should have some acquaintance with the outlines of the more important types of farming in other parts of the country, and in this respect several candidates were manifestly deficient.

The Examiners regret to find that many candidates were practically ignorant of the main results obtained in the long-continued manurial treatment of the meadow at Rothamsted, and they cannot help thinking that the teaching at Agricultural Colleges should take account of the more important work carried out at the leading experimental stations.

Too often candidates were disposed to attribute most, if not all, of the benefits of basic slag to the treac lime that it contains; while lack of knowledge of the value of the manurial constituents of leading foods was also not infrequently manifested. These are subjects that might with advantage receive more attention in the teaching.

MENSURATION AND LAND SURVEYING. Mr. R. E. C. Burder, P.A.S.I.

Old Regulations, 200 Marks.

Only three papers were submitted in this subject. They were all well done, and do not call for any special comment.

FARM AND ESTATE ENGINEERING. Mr. R. E. C. Burder, P.A.S.I.

(Surveying and Farm Building); Professor R. Stanfield, M.Inst.C.E.
(Machinery and Implements).

New Regulations, 300 Marks.

AGRICULTURAL ENGINEERING. Professor Stanfield.

Old Regulations, 200 Marks.

Surveying and Farm Buildings.—There was this year, I consider, a general improvement in the papers. In the *Surveying* section, the plans were, in nearly all cases, correctly drawn. More time might well have been devoted, however, to the study of the Ordnance Map, as in several cases the candidates were unable to say correctly to what scale a map had been drawn, and, in others, appeared very uncertain about it. In the *Buildings* section, a good knowledge was displayed of the proper dimensions to be adopted in the construction of a Cow Byre, and the candidates also seemed to appreciate the chief points which should be attended to in the formation of the floors and gutters. The answers given to the question on fencing showed a very fair acquaintance with the subject.

Machinery and Implements, and Agricultural Engineering.—The questions set in these two papers were sufficiently varied to enable me to obtain an idea as to the character of the candidates' training and experience.

Fifteen candidates presented themselves for examination in Agricultural Engineering (Old Regulations), and fifty-two attempted the paper in Machinery and Implements (New Regulations).

The questions were answered very satisfactorily on the whole, but it is evident that very little practical instruction is given to the candidates in the actual working and care of such engines and machinery as are usually found on a modern farm. The answers obtained in the written papers and the *verbal* examinations indicated that the candidates' knowledge was mainly theoretical, or derived from books—many of them had never seen an engine working except at Shows, and their knowledge of implements was generally confined to one type only.

In my opinion an actual experience of the working of oil engines, also steam engines and boilers, is most important for an agriculturist, and opportunities should be given to the students for acquiring this knowledge.

AGRICULTURAL CHEMISTRY. E. J. Russell, D. Sc. and Herbert Ingle, B. Sc.

Old Regulations (Part II.), 200 Marks. New Regulations, 300 Marks.

Some of the candidates were distinctly good and had evidently been well grounded in their subject, but a certain number possessed only a fragmentary and disconnected knowledge which could hardly be of any real service to them in their subsequent work.

They formed two classes—those who had a fairly wide knowledge of practical agriculture but a slender acquaintance with chemistry, and those who possessed a fair general knowledge of pure chemistry but knew little of the applications of chemistry to agriculture.

It cannot be too strongly emphasised that agricultural chemistry is useful to the student only when he combines a good working knowledge of chemistry with a sound appreciation of the conditions obtaining in actual farm practice.

AGRICULTURAL BOTANY. R. Stewart MacDougall, M.A., D.Sc.

New Regulations, 300 Marks.

The candidates in Agricultural Botany acquitted themselves creditably, and the result of the examination affords good proof of the excellence of the teaching in the various centres. Thirteen per cent. of the candidates failed, while 17 per cent. gained 75 per cent. of the marks or over.

If I were to offer criticism of the candidates it would be that there was a distinct tendency to keep the principles of the subject in a close compartment distinct and non-related to the practical. Questions in the oral examination that related to principles were answered often with difficulty as if the theoretical and scientific had come in an earlier stage and might be neglected. On the other hand the recognition of specimens of diseases and agricultural plants and their seeds was done capitally and proved an encouraging part of the *viva voce* examination.

AGRICULTURAL BOOK KEEPING Mr Charles S Orwin F S I

Old Regulations 200 Marks New Regulations 200 Marks

I am glad to be able to report that the general standard of the work in this subject was very satisfactory indeed. There were seventy-one candidates of whom sixteen came under the *old* Regulations and fifty-five under the *new* Regulations. Many of the candidates found the paper too long and there was a considerable number of faults in the arithmetic of the answers but the principles of double entry Book keeping were clearly understood in the great majority of cases. The general impression created by the paper and by conversations with many of the candidates was that more might be done with advantage to teach the objects of accounts and to show how they can assist in the management of the farm and to point out that mere mechanical accuracy in any particular form of book keeping is not the only object to be aimed at.

AGRICULTURAL ZOOLOGY R A Harper Gray, M A, M Sc

New Regulations 200 Marks

The written papers in this subject were on the whole well done the answers to the questions set giving evidence of much careful study on the part of the majority of the candidates.

Many too showed an intelligent appreciation of the practical importance of the specimens shown to them in the *viva voce* part of the examination whilst about one quarter of the number of candidates were unable to identify some of the more common specimens.

The *viva voce* standard of the work shown was distinctly good.

VETERINARY SCIENCE Professor Sir John McFadyean, M B

Old Regulations (Part II) 100 Marks New Regulations 200 Marks

The proportion of candidates who failed to obtain pass marks in this subject was rather higher than usual but upon the whole the knowledge displayed both in the written and in the *viva voce* part of the examination was satisfactory. As in previous years a number of the papers afforded evidence of defective general education both spelling and composition being bad.

11. The thanks of the Board are again due to the authorities of the University of Leeds, for their liberality and courtesy in placing the Large Hall and other rooms of the University at the Board's disposal for the Examination; and to the Examiners, for the care and attention they bestowed upon the written answers to the papers set, and upon the *viva voce* examination.

ALEXANDER CROSS, *Chairman.*

THOMAS MCROW, *Secretary.*

16 Bedford Square, London, W C
July, 1913

II.—REPORT ON THE RESULTS OF THE EIGHTEENTH EXAMINATION FOR THE NATIONAL DIPLOMA IN DAIRYING, 1913.

1. The Eighteenth Annual Examination for the National Diploma in the Science and Practice of Dairying took place in September, 1913. The Examination was held for English candidates at the University College and British Dairy Institute, Reading, from September 13 to 19; and for Scottish Candidates at the Dairy School for Scotland, Kilmarnock, from September 19 to 26.

2. The number of candidates at both centres was smaller than in 1912, and this was doubtless attributable, in a great measure, to the fact that as a preliminary to the acceptance of an application for permission to enter for this year's Examination, each candidate was required to produce certificates (1) testifying that he or she had received at least six session months' instruction in practical dairy work at an approved Dairy training institution; (2) showing that he or she had attended approved courses in Chemistry, Bacteriology and Botany, and had satisfied the authorities of the institution of his or her fitness for admission to the Examination.

3. Thirty-three candidates presented themselves at the English centre. Of these, the following twenty-two satisfied the Examiners, and have therefore been awarded the National Diploma in the Science and Practice of Dairying:—

PERCY WALTER BAILEY, Midland Agricultural and Dairy College, Kingston, Derby.

MISS NORA CHEW, Lancashire County Council Farm, Hutton, Preston.

MISS RUBY KATHLEEN COVENTRY, Midland Agricultural and Dairy College, Kingston, Derby.

MISS RUBY DIXON, Midland Agricultural and Dairy College, Kingston, Derby.

MISS ESSIE EVANS, University College of Wales, Aberystwyth.

HAROLD HENRY GARDNER, Harper-Adams Agricultural College, Newport, Salop.

JOHN STUART BEATLEY GATHERGOOD, University College and British Dairy Institute, Reading.

ARTHUR HERRANS HILL, East Anglian Institute of Agriculture, Chelmsford.

THOMAS HENRY HOWARD, University College and British Dairy Institute, Reading.

FLOWERS LEONARD KIRK, Midland Agricultural and Dairy College, Kingston, Derby
MISS EDITH MARY LEWIS, University College and British Dairy Institute, Reading.
MISS MURIEL HOPE MONKS, Midland Agricultural and Dairy College, Kingston, Derby.
MISS WINIFRED ALICIA MORE, Midland Agricultural and Dairy College, Kingston, Derby
HERBERT WILFRID PAGE, East Anglian Institute of Agriculture, Chelmsford
MISS GLADYS PIMLOTT, Midland Agricultural and Dairy College, Kingston, Derby.
MISS L ELEANOR PRITCHARD, Midland Agricultural and Dairy College, Kingston, Derby.
MALCOLM ION BELL SHAW, University College and British Dairy Institute, Reading.
MISS WINIFRED SPILSBURY, Midland Agricultural and Dairy College, Kingston, Derby.
MISS SARAH TAMAR SLINGER, Midland Agricultural and Dairy College, Kingston, Derby.
MISS LAURA MERIOL TREVOR, University College and British Dairy Institute, Reading.
EDWARD WEBSTER, Midland Agricultural and Dairy College, Kingston, Derby.
MISS GERTRUDE WILCOCK, Lancashire County Council Farm, Hutton, Preston.

4. At the Scottish Centre thirty-six candidates were examined, and of these the twenty-four whose names are given below were successful in gaining the Diploma :

ARCHIBALD ALLAN, 5, Huntly Terrace, Shettleston, Lanarkshire.
MISS NELLIE BENNION, Daisy Bank Farm, Barthomley, Crewe.
WILLIAM HENRY BIGNALL, Edon Orphanage, Astley Bridge, Bolton.
ROBERT WALLACE BROWN, Garliffan, Cumnock, Ayrshire.
WILLIAM CALDWELL, Burnhouses, Kilmarnock.
MISS CATHARINE DOUGALL, Pretoria, South Africa.
JOHN HARVEY FAULDER, 21, Lazonby Terrace, Haraby, Carlisle
MISS MARY FRASER, Torgormack, Kilmorack, Beaulieu.
MISS MAGGIE GIBSON, Woodpark, Dalbeattie.
CHARLES WILLIAM GOODE, Holmfield, London Road, St Albans.
MISS EDIE HAMILTON, Pretoria, South Africa.
ALEXANDER HAY, The Manse, The Mall, Montrose.
ANDREW HEAL, Otterburn, S.O., Northumberland.
ROBERT JAMES KERR, 1, High Street, Kirkcudbright.
WILLIAM KIRKPATRICK, Longbridgemuir, Ruthwell, Dumfries.
JAMES KIRKWOOD, West Michelton, Lochwinnoch, Renfrewshire.
JAMES RUSSELL M'CALLUM, 9, Pitt Street, Edinburgh.
HARRY MUTR M'CREATH, Oballoch, Newton Stewart, Wigtownshire.
JOHN MILLER, Stairhill, Mauchline, Ayrshire.
MISS DOROTHY GRAHAM NESS, 58, Albert Drive, Pollokshields, Glasgow.
JOSÉ PEDEN, Ikreny, Queen Mary Avenue, Crosshill, Glasgow.
ROBERT JAMES SMITH, East Mains, Knockando, Morayshire.
MISS DAISY TOCHER, Blairmore Farm, Nairn.
MISS MARY TOCHER, Blairmore Farm, Nairn.

5. Professor Douglas A. Gilchrist, who acted at both centres as Examiner in General Dairying and in practical Butter-making,

reports that at Reading the work on the whole was excellent, although a few of the candidates were not as conversant with practical dairying on a farm as they should be. A want of knowledge of farm and of dairy book-keeping, which was commented on by the examiner last year, is still noticeable. The candidates showed a good knowledge of feeding rations for dairy stock, of the healthy rearing of dairy stock, and of recent legislation in connection with dairying.

At Kilmarnock the work was also of a similarly high character. The good work done by Milk Record Associations in the West of Scotland was well known, and at this centre the practical experience of the candidates on dairy farms was undoubtedly better than at Reading, but in some cases a sufficient knowledge of the scientific side of general dairying had not been obtained.

The work generally at both centres indicated that careful instruction is being given in general dairying and in practical butter-making at the different teaching centres, and that this instruction has reached a much higher standard in recent years. Some of the candidates both at Reading and at Kilmarnock gave quite good indications of being able to impart instruction in a satisfactory manner.

6. Mr. John Benson, who again acted as Examiner in Cheese-making at both centres, reports that the work of candidates in both the theory and practice of cheese-making was very satisfactory and much in advance of the standard of previous years. It was very evident that more care had been taken by both teacher and candidate in preparing for this Examination, and the new Regulations which came into force this year eliminated almost entirely that class of candidate who came up in other years wholly unprepared, but who took a chance of getting through the Examination.

This year—under the new rules—the selection of the hard pressed variety of cheese required to be made by each candidate was in the hands of the Examiner, and the arrangement worked very well indeed. With the exception of the Cheshire, all the varieties were equally well made. They were true to type and satisfactory in all respects. Respecting a certain number of the candidates who were required to make Cheshire cheese, the Examiner was not quite satisfied that they understood the process thoroughly. The tendency was to handle the curd too roughly and to break it too fine during the earlier stages of manufacture. In some cases also too much acidity was developed before drawing off the whey. These cheeses when ripe will not, however, be bad, but they will not possess the qualities one expects to find in really well made Cheshire cheese.

The milk supplied this year was very suitable for cheese-making purposes, and the arrangements made for conducting the Examination were excellent.

7. Dr. T. W. Drinkwater, the Examiner in Chemistry and Bacteriology, reports that at the Reading Centre he examined thirty-one candidates. He found that their knowledge of Bacteriology was sound, and the questions were well answered both on the paper and *vivâ voce* examination. Dairying Chemistry was on the whole satisfactory. Some of the candidates were badly prepared in General Chemistry, their knowledge of this branch of the subject being of a most elementary character. One candidate was totally unprepared for an examination of the Diploma standard.

At the Scottish Centre thirty-six candidates were examined by Dr. Drinkwater. The majority of them were well prepared for the examination, and the written answers were more satisfactory than on any previous occasion on which he has acted as Examiner. In the oral examinations one or two candidates showed that they had learned a good deal by heart and were altogether unable to apply their knowledge to the practical side of dairy practice. The majority, however, showed a good practical knowledge of both general chemistry and bacteriology.

ALEXANDER CROSS,
Chairman.

16 Bedford Square, London, W C.
October, 1913

ANNUAL REPORT FOR 1913 OF THE PRINCIPAL OF THE ROYAL VETERINARY COLLEGE.

ANTHRAX.

THE following Table shows the number of outbreaks of disease and the number of animals attacked during each of the last six years :—

Year		Outbreaks		Animals attacked
1908	...	1,105	...	1,429
1909	...	1,317	...	1,698
1910	...	1,496	...	1,776
1911	...	907	...	1,120
1912	...	748	...	840
1913	...	594	...	652

At a first glance these figures appear to show that in the year 1911 there was a sudden marked reduction in the number of outbreaks of anthrax occurring in Great Britain. The reduction shown in 1911, however, was probably only an apparent one, due to the fact that an important new procedure in dealing with the disease was introduced at the beginning of that year. Previously, when a suspected case was reported the decision as to whether it was, or was not a case of anthrax was left to the veterinary inspector to the local authority, but since the end of 1910 the diagnosis in all suspected cases has been based on a microscopic examination, by expert officers of the Board of Agriculture and Fisheries, of blood or other material forwarded from the carcass by the local veterinary inspector. Hence, since that date only such "confirmed" outbreaks are included in the returns, whereas previously the corresponding figures included all "reported" outbreaks.

Assuming that the diagnosis made by the officers of the Board is the more accurate, the drop in the outbreaks in 1911 was simply the measure of the errors in diagnosis that were made under the old system.

On the other hand, there appears to be no reason why the fall in the number of confirmed outbreaks since 1911 should not be accepted as evidence that the disease is becoming less prevalent, and the marked reduction during the past year is particularly gratifying.

It will be observed that the number of animals attacked is not greatly in excess of the number of outbreaks, which, of course, means that in the great majority of cases what is called an outbreak comes to an end with the death of the first animal

attacked. This has always been a feature of the returns regarding anthrax in this country, and it contradicts the common public opinion that the disease is a highly contagious one. Evidence presented in previous reports suggests that a great deal of the anthrax which occurs in this country is caused by the consumption of imported food-stuffs which contain or are contaminated with the germs of anthrax. In so far as such contamination occurs in the raw material before shipment, this is a danger against which it is difficult to devise effective measures; but it is not improbable that the contamination frequently occurs through food-stuffs and hides from anthrax animals being carried on the same ship, either on the same or successive voyages, and that is a source of the disease which might be checked without great expense or interference with trade.

But it cannot be too strongly emphasised that although most cases in this country are started by seeds of the disease brought from foreign countries in which anthrax is much more prevalent, any case originating in that way may be the starting point of a serious outbreak, and even of recurrent outbreaks at considerable intervals of time, if proper precautions are not taken in connection with the diseased animal and its carcass. It, therefore, appears to be desirable to repeat the warning that the sudden unexpected death of a farm animal, and especially of one of the bovine species, should raise suspicion of anthrax, and lead the owner to report the case to the local authority.

GLANDERS.

The following Table shows the incidence of glanders in Great Britain during the last eight years :—

Year		Outbreaks		Animals attacked
1906	...	1,066	...	2,012
1907	...	854	...	1,921
1908	...	789	...	2,433
1909	...	533	...	1,753
1910	...	351	...	1,014
1911	...	208	...	501
1912	...	173	...	314
1913	...	162	...	447

It is satisfactory to observe that during the past year a further reduction in the prevalence of the disease has been effected, at least as regards the number of outbreaks, although it is a little disappointing to find that there was no reduction in the number of animals attacked. The glanders order now in force came into operation on January 1, 1908, and it is impossible to doubt that the progress which has been made towards the complete eradication of the disease is mainly due to one of its

provisions, viz., that which indirectly compels owners to allow all their "in contact" horses to be tested with mallein whenever a case of glanders has been detected on their premises. A certain measure of credit for the result must, however, be given to the practical suppression of cab and omnibus stables, which were always the establishments that furnished the largest proportion of cases of glanders among their horses.

FOOT-AND-MOUTH DISEASE.

During the year 1912 there were 83 outbreaks of this disease, in which 645 animals were attacked. The last of these outbreaks occurred in December, and, like the others, it was promptly suppressed by the energetic measures taken by the Board of Agriculture and Fisheries. During the past year the country continued to be free from the disease till November, on the 12th of which month an outbreak was detected on a farm in the county of Sussex, near Eastbourne. The number of animals attacked in this outbreak was 23 (all cattle), and the disease disappeared with the slaughter of these and of 13 cattle and 2 swine which had been exposed to infection.

A second and more extensive outbreak in which 50 cattle were attacked was detected on December 15 on a farm in the county of Hertford, near Welwyn. This outbreak was also successfully dealt with by the prompt slaughter of the diseased cattle and of the other animals (1 cow and 60 swine) which had been exposed to infection. The two outbreaks appear to have been been unconnected, and no circumstance explaining the origin of either was discovered.

SHEEP SCAB.

The number of reported outbreaks of this disease during the last six years was as follows :—

Year		Outbreaks
1908	...	849
1909	...	685
1910	...	556
1911	...	434
1912	...	302
1913	...	236

These figures speak for themselves. Very satisfactory progress has been made during the past year, and if the rate of reduction could be continued the last of the disease in Great Britain would soon be seen. That, however, is hardly to be expected, for special difficulty is likely to be encountered in rooting it out from the mountain and hill farms to which it is now mainly confined.

PARASITIC MANGE.

The Order under which mange in horses is now dealt with only came into force on January 1, 1912. During that year 2,873 outbreaks, with 6,068 animals attacked, were reported. During the past year there were 500 fewer outbreaks and 1,441 fewer animals attacked, which may be considered a fairly satisfactory result.

SWINE FEVER.

The following Table shows the number of reported outbreaks of this disease during each of the last seven years:—

Year				Outbreaks
1907	...	...	...	2,386
1908	...	...	...	2,067
1909	...	...	...	1,650
1910	...	...	...	1,598
1911	...	...	...	2,466
1912	...	...	...	2,920
1913	...	...	...	2,573

The result of last year's operations against the disease must be considered very unsatisfactory and disappointing. The only crumb of satisfaction that can be extracted from the figures is that the year was not so bad as its predecessor. It is not possible to infer from them that the measures now in force will ever stamp the disease out.

Swine fever is a disease which is absolutely peculiar to the pig species. Not only does it not spread to other animals under natural circumstances, but it also cannot be communicated to these by inoculation or other experimental methods of infection. The cause has not been identified with the microscope, presumably because of its very minute size, for such a liquid as blood serum may be proved by inoculation to be rich in the so-called "virus" of the disease although no bacteria or other micro-organisms can be detected in it by the highest magnification of which the best modern microscopes are capable. As it is easy to prove that the cause multiplies in the bodies of infected swine no one doubts that it is a living organism. Hitherto it has not been found possible to induce the cause to grow or multiply outside the body, that is to say, it has not yet been cultivated artificially.

In a pig suffering from acute swine fever the cause or virus is abundantly present in the blood, and it also frequently occurs in certain of the excretions, notably the urine and the discharge from the eyes, and probably also the fæces. Inoculation is the most certain experimental method of infection, but the disease may also be set up by causing healthy pigs to inhale or swallow the virus. The disease spreads readily by

contact, and it is generally assumed that ingestion or swallowing of the virus is the common natural method of infection, although it is not improbable that the disease may be contracted through inhalation.

As is the case in some other contagious diseases, the virulence of swine fever varies considerably, the virulence being measured by the severity of the illness and the mortality among the pigs attacked or exposed to infection. When first introduced into a country the mortality may reach 90 per cent. or even more, but after a time the disease often becomes less virulent, with the result that the majority of the pigs attacked recover, and many never become visibly ill although exposed to infection. In the outbreaks of ordinary severity the period which elapses between infection and the commencement of the actual illness is usually about ten days, but it may be considerably less than that or it may be as long as three weeks. And here it is important to note that in mild cases there is no definite period of incubation, since although infected and actually diseased the animal may never become obviously ill. The disease is spread to fresh premises mainly by the traffic in pigs in the incubation stage of the disease, or in pigs which, although actually diseased, do not present definite symptoms.

In the majority of cases a pig which contracts swine fever either dies within a few weeks or it recovers rapidly and completely and is afterwards immune against a further attack. Unfortunately there are cases in which diseased pigs make a recovery which is incomplete, since they remain capable of spreading the disease.

The method of dealing with swine fever which was adopted in 1892, when the disease was taken over by the Board of Agriculture, may be said to be based on the following contentions :—

1. The disease is a purely contagious one, like cattle-plague and bovine pleuro-pneumonia, and it is therefore capable of being stamped out.

2. To stamp the disease out will be economically sound because the cost of eradication will be less than the sum of which the interest would equal the annual loss inflicted by the disease.

The first of these contentions appears to be perfectly sound, and at any rate it has not been disproved by the fact that an effort which has now been sustained for twenty-one years has not stamped the disease out. The severe measures which eradicated cattle-plague and pleuro-pneumonia of cattle have not been consistently employed against swine fever, and the late Sir George Brown prophesied that no milder plan would succeed in stamping out the disease. The two

diseases mentioned were successfully dealt with because drastic restrictions were placed on the movement of cattle in infected districts, and every animal known or reasonably suspected to have been exposed to risk of infection was promptly slaughtered, and there does not appear to be any reason to doubt that the consistent application of the same procedure would yield the same result in the case of swine fever.

The soundness of the second contention is much more open to doubt, especially as in estimating the annual loss inflicted by the disease one has to take into account the possibility of diminishing the loss by comparatively inexpensive means, that is, inexpensive as compared with the cost of enforcing stamping-out measures. It may be added that the calculation is also made difficult because it is not easy to estimate the indirect losses which a contagious disease or the measures enforced against it entail by interference with breeding and trade in animals. It is obvious, however, that if a simple inexpensive cure for swine fever, or a quick and not too costly method of immunising pigs against the disease could be discovered the stamping-out plan would immediately become economically unsound. If either of these things could be discovered it might no longer be worth while to retain swine fever among the scheduled contagious diseases, and at any rate it would be intolerable to maintain the measures which are now enforced against it. During the past year it has been freely asserted that this is the actual state of affairs with regard to swine fever, since the discovery of what is termed the "serum treatment" is held to be at once a curative and an immunising procedure. The Board of Agriculture and Fisheries has accordingly been reproached for not introducing this method of treatment, and it has even been suggested that the existing "regulations might be swept away, root and branch, with advantage." It therefore appears to be of interest to explain what is meant by "serum treatment" of swine fever, and to examine the evidence put forward to show that it might with advantage be used to replace the present method of dealing with the disease.

Anti-swine fever serum is prepared on the same plan as the well-known anti-diphtheria serum, anti-tetanus serum, &c. The general principle which underlies the manufacture of these substances is as follows:—When an animal is found to be immune after recovery from a particular bacterial disease, that is because it has present in its body, and particularly in its blood, a substance which is injurious to the bacteria of that disease. The animal body has been provoked during the illness to manufacture this substance, and it continues to

manufacture it for a considerable and often long period after recovery. When the bacteria of the same disease are introduced into the body of such a recovered animal they are acted upon directly or indirectly by this substance, in consequence of which their multiplication is prevented or checked and the animal escapes a second attack.

When a recovered animal has such an immunising substance in its blood it would be natural to expect that its blood if transferred in sufficient quantity to another animal ought to immunise the latter, and in some cases that is found to be the actual fact. In general, however, one cannot usefully employ the blood of a recovered animal for this purpose because the quantity necessary to immunise another animal would be too great. The recovered animal's blood is, so to speak, too weak in the immunising substance; but fortunately it can be greatly strengthened by a process which is termed hyper-immunising. This consists in inoculating the animal at intervals with gradually increasing doses of the bacteria which are the cause of the disease, and under this stimulus increasing quantities of the immunising substance are manufactured and accumulate in the blood. Hence, the blood of such a hyper-immunised animal may even in a small dose suffice to protect another animal into which it is injected.

The preparation of an anti-swine fever serum is attended with special difficulties, (1) because, as the pig is the only animal susceptible to swine fever, other animals, such as horses or cattle, cannot be used as serum producers; and (2) because, since the swine fever organism will not grow outside the body, one cannot employ artificial cultures for hyper-immunising, but must rely for this purpose on the blood of pigs suffering from swine fever.

The manufacture of the serum is carried on in the following way. Large numbers of healthy pigs are infected with swine fever, and at the height of the disease they are bled to death, the blood being collected in a sterile condition. This highly virulent blood is used for hyper-immunising selected healthy pigs which are to serve afterwards as the serum-producers. The animals of this set must already have some immunity in consequence of their having recovered from an attack of swine fever, or they must be given a dose of anti-swine fever serum. This is necessary because it is evident that otherwise the first dose of virulent blood given to them would probably set up a fatal attack of swine fever.

After repeated injections of virulent blood at fortnightly intervals, the serum-producing pigs are themselves bled, and it is the serum obtained from their blood which is used in practice to treat the animals where swine fever has broken out.

Facts which stand beyond dispute with regard to well-prepared anti-swine fever serum are :—

1. A moderate dose of the serum when injected under the skin of a healthy pig will confer on it a high degree of immunity against swine fever.

2. The immunity thus conferred declines steadily, and unless a further dose of serum be given it disappears in three or four weeks.

3. When injected during the period of incubation, or at the very outset of the visible illness, the serum exerts curative effects, but it cannot be relied upon to check the course of the disease during its advanced stages.

Two different methods of employing the serum have been recommended and practised, and these must be considered separately.

1. *The simple serum method.*—Under this system when an outbreak occurs all the visibly diseased pigs are slaughtered, and each of the apparently healthy animals is given a dose of serum. Remembering an important fact already stated, viz., that the immunity conferred by serum only lasts for three or four weeks, one might have reasoned that this could not be an effective method of dealing with an outbreak, for one would have supposed that at the end of a month events would simply resume their normal course, the disease attacking the pigs which had now lost all their immunity. But experience shows that this is not what usually happens. According to the Hungarian experience in about half the cases the outbreak may be definitely cut short by the serum, while in the remaining outbreaks cases continue to occur afterwards. In those outbreaks in which the disease appears to be definitely stamped out by serum treatment it is probable that many of the pigs have actually become infected before the serum immunity has been lost, and have thus passed through a mild unnoticed attack of the disease, in consequence of which they are immune for a long period afterwards.

It is important, however, to notice that in many cases the disease and the deaths continue after the whole of the surviving pigs have been treated with serum. Thus, in Hungary, in 1909—1911 (in which period more than a million swine were thus treated), statistics collected with regard to 695 outbreaks showed that in 597 the deaths after treatment averaged 4·2 per cent., and that in the remaining 98 outbreaks they averaged 40·7 per cent. of the pigs.

- Serum and virulent blood method.*—Under this plan each apparently healthy pig at the scene of an outbreak is given a dose of serum and at the same time a dose of virulent blood, in the expectation that this will cause each animal to pass through

a mild non-fatal attack of swine fever, in consequence of which it will afterwards be immune. There are no statistics to prove that this is a better method than the one previously described, although it is the one which appears to be most favoured in the United States of America.

The three countries in which the serum treatment has been most extensively practised are the two already mentioned—Hungary and the United States—and Holland. No information that is of any real value for enabling one to compare serum treatment with other methods of dealing with outbreaks is obtainable from Holland for the simple reason that swine fever in that country has never been made notifiable, and there are therefore no statistics to show either the past or the present prevalence of the disease. Since the disease is not notifiable it follows that there are no restrictions on the sale or movement of diseased or suspected pigs.

The statistics that are of most value are those obtained from Hungary, and the figures already quoted make it plain that the serum treatment could never be expected to eradicate swine fever. A fair retort to this statement would be that there appears to be no likelihood that the measures now enforced in this country will ever stamp out the disease either, and that, as a means of holding it in check, serum treatment would be equally efficacious and less expensive both to the unfortunate owner and to the country at large. But the last is a claim which cannot be conceded, for no one can show that there is even a reasonable probability that the most extensive use of serum for diseased and suspected pigs could hold the disease in check if the existing restrictions on movement were swept away. No country has yet considered it safe to abandon such restrictions while making use of serum as a means of dealing with actual outbreaks. This fact requires to be emphasised because serum treatment is erroneously being put forward as a method that will make it safe to sweep away all restrictions on movement. It is impossible to conceive that any owner of healthy pigs who is acquainted with the evidence could be in favour of such a proposal.

But while thus maintaining that severe restrictions on movement will continue to be necessary to prevent swine fever from becoming still more prevalent, it may without any inconsistency be admitted that serum treatment might probably be employed with advantage in dealing with a proportion of the outbreaks in this country, viz., those occurring in large stocks. Hitherto in such cases the practice has been either promptly to slaughter out the entire stock or to kill only the visibly diseased and impose a long period of quarantine on the premises. The first method is expensive for the State, and

the second for the owner. Serum treatment might well be tried in such cases, but even then quarantine would have to be kept up for a considerable period.

Again, there are cases in which the Board of Agriculture and Fisheries at present considers it necessary to declare certain premises as infected because of proximity to a place where the disease has been proved to exist, although it may be probable that the pigs on the premises in question have not yet been infected. In such a case it might be safe to abstain from quarantining the suspected premises on condition that every pig in them received a dose of serum, or several doses at intervals of some weeks.

TUBERCULOSIS.

The Tuberculosis Order came into force on May 1, 1913, and the past year will therefore remain a memorable one in the history of contagious diseases of animals in this country. The Order may be said to constitute the first official recognition of the fact that tuberculosis of cattle is a contagious disease, although the Dairies, Cow-sheds, and Milk-shops Order of 1899 took cognizance of tuberculous disease of the cow's udder as a source of danger to the health of human beings.

Under the Order every person having in his possession or under his charge any cow which is or appears to be suffering from tuberculosis of the udder, indurated udder, or other chronic disease of the udder, or any bovine animal which is or appears to be suffering from tuberculosis with emaciation, is required to give immediate information of the fact to a constable of the Police Force of the district, or to an Inspector of the Local Authority. The owner of an animal regarding which such notice has been given is also required to keep it isolated as far as practicable from other bovine animals, and also to keep it in his possession, or under his charge, until it has been examined by a veterinary inspector, or until the owner or person in charge of the animal has been notified that it need not be further detained or isolated. This obligation to isolate the animal and keep it in the owner's possession is subject to the condition that the animal may at any time be slaughtered by the owner or person in charge.

It is evident that in a sense the Order requires owners of cattle to make a diagnosis, or at least to be able to recognise certain symptoms as suggesting the existence of tuberculosis in their animals, and it therefore appears to be desirable here to point out (1) what are the usual indications of tuberculosis of the udder, and (2) what are the other outward evidences that an emaciated animal is tuberculous.

Tuberculosis of the udder.—In the first place it may be pointed out that there is no occasion to suspect as being tuberculous, and, under the Order, no obligation to report, any case of acute udder disease. Thus, this common form of inflammation of the udder which within the course of a day or two leads to considerable swelling of the quarter, accompanied by heat, tenderness, and marked alteration in the appearance of the milk, can by these characters be immediately recognised as not tuberculous.

Tuberculosis of the udder is a chronic inflammation of the gland which progresses slowly but steadily. In the majority of cases the disease commences in the upper part of one of the hind quarters, and when it first attains such a size that it is likely to attract attention, the diseased quarter will be found to be larger than it ought to be, and also very distinctly firmer than normal. Although the disease usually begins in a hind quarter, it must be remembered that it may begin in a fore quarter. It is a rule that has few or no exceptions that when once the disease has started in any one of the quarters it continues to extend until, if the animal survives long enough, the whole of the tissue of the quarter has been attacked. If the animal is left alive, the disease may spread to one or more of the remaining quarters, and in the end the entire udder, or at least the diseased quarters, may have a size far in excess of what is normal.

The character of the milk yielded by the diseased quarter or quarters is of some value for recognising tuberculosis of the udder. At the outset, and even after the enlargement and induration of the quarter have become distinctly recognisable, the milk is often not diminished in amount and not sensibly altered in appearance, or at least its appearance in the milking pail may be quite normal. At this stage, however, if some of the milk from the diseased quarter is poured into a test tube and allowed to stand one may be able to detect an abnormal amount of sediment at the bottom of the tube. At a somewhat later stage the milk becomes visibly thinner than it ought to be, and on standing in a test tube it throws up only a small amount of cream, while an increased amount of deposit is found at the bottom of the tube. When the disease has become very extensive in a quarter the milk is always much reduced in quantity and markedly altered in quality, and eventually all that can be obtained from the quarter is a thin, somewhat whey-like liquid, which on standing throws down a large amount of deposit. As a negative character of some value for diagnosis, it may be mentioned that the enlarged quarter practically never bursts at any place or discharges matter and that the skin over the indurated part generally remains quite normal and freely movable with the hand.

What precedes may be summed up by saying that tuberculous disease of the udder should be suspected when it is discovered that in any one of the quarters there is enlargement with induration but without pain or tenderness, and when it is observed that the enlargement and induration are increasing although the milk is but little altered in quantity or quality.

It has already been pointed out above that acute inflammations of the udder are never tuberculous, but, unfortunately for diagnosis, tuberculous inflammation is not the only one that runs a chronic course. Many of the acute inflammations of the udder when they subside leave a certain amount of chronic induration of the diseased quarter, but in the immense majority of such cases the diseased quarter is smaller than normal, as is easily recognised on comparing it with the opposite quarter. An abnormally small quarter, therefore, need not be suspected of tuberculosis although it is somewhat indurated. There are, however, cases of chronic inflammation of the udder caused by other organisms than the tubercle bacillus which are characterised by enlargement and a certain degree of induration, and these are the cases which are most difficult to distinguish from tuberculosis of the udder by simple examination of the diseased part with the eye and hand. In such cases an accurate diagnosis can only be made by microscopic examination of the milk or by testing it by experimental inoculation into guinea-pigs or other animals. However, the fact that tuberculous inflammation of the udder is not the only form of udder disease accompanied by enlargement and induration of the diseased quarter or quarters does not relieve the owner from the obligation of suspecting and reporting every case in which these symptoms are present.

Tuberculosis with emaciation.—This is an expression which admits of more than one interpretation. In the first place, the word “emaciation” can scarcely be defined with precision, but probably it was intended to cover cases in which the animal is in such a thin condition as to suggest the existence of actual disease. Putting aside cases of tuberculosis of the udder, there are cases in which a simple clinical examination may leave little or no doubt that a cow or other bovine animal is tuberculous although it is not thin or emaciated. Such are cases in which certain of the superficial lymphatic glands of the body are markedly enlarged, but it is to be noted that under the Order there is no obligation to report these. Provided the animal does not present any indications of tuberculosis of the udder it does not come under the Order unless it is emaciated.

There is no doubt that a great many of the emaciated cows, or so-called “wasters,” are tuberculous, and their poor condition is then due to the destructive effects of the tuberculous disease

existing in their internal organs. It is therefore well that when an owner observes that any one of his cows is becoming decidedly thin the possibility that the animal is tuberculous should be considered, and if the animal has a cough the case should undoubtedly be notified.

By no means all the so-called "wasters" and "piners" which used to be seen in some of the markets are cases of tuberculosis with emaciation. In a considerable proportion of such cases the disease affecting the animal is John's disease. It is not always easy even for an expert to distinguish between John's disease and tuberculosis, but there are many cases in which the former can be distinguished with tolerable certainty simply by having regard to the symptoms. When a cow's loss of condition has been manifestly the result of continued severe diarrhoea and the animal has presented no other symptom of illness, and in particular has never had any cough, there is no occasion to suspect tuberculosis. It is true that animals affected with tuberculosis sometimes suffer from diarrhoea, but that is nearly always a late symptom setting in after the animal has already seriously fallen off in condition, and the diarrhoea is then usually accompanied by quite unmistakable evidence that there is some disease of the animal's lungs.

However, it would not be wise to endeavour to instruct owners with regard to what may be termed the refinements of diagnosis in cases in which the symptoms raise a suspicion of tuberculous disease. The proper course for the owner when he entertains the least doubt is to notify the case and leave the responsibility for accurate diagnosis to the local authority.

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ANNUAL REPORT FOR 1913 OF THE CONSULTING CHEMIST.

IN 1913 there were about the same number of samples analysed on behalf of Members, in the Society's Laboratory, as in the previous year. The number of ordinary samples was 410 as compared with 437 in 1912. In addition there were 191 samples of milk and 40 samples of cider analysed in connection with the Society's Country Show at Bristol.

The list of samples given at the close of this Report shows a notable increase in the number of soil analyses, there having been 31 of these, and most of them complete analyses.

At a time such as the present, when a good deal is written as to the chemical analysis of a soil being of comparatively little value, it is satisfactory to note that there are those who find the Reports issued from the Society's Laboratory of decided use to them. I do not maintain that chemical analysis of a soil will tell everything about it; considerations as to the physical and mechanical nature of a soil have to be taken into account; also—a point to which importance has been lately attached—the conditions of the organic life in soil. If a soil be not well drained, it may be ever so rich in constituents of fertility, as shown by chemical analysis, but it may not be productive. All such points as these have to be taken into consideration in conjunction with the chemical analysis. But long experience tells me that, in capable hands, the results of chemical analysis, when properly interpreted, may afford very useful guidance, and may also save a great deal of expense in the matter of manuring. It is quite true that, in a soil analysis, much turns upon very small differences in the analytical figures; a rise of .1 per cent. on the dry soil means, for example, the application of a great deal of a particular constituent in order to effect this rise. This, however, only emphasises the need of extreme accuracy, such as is not found except in skilled hands. If this provision be secured, then it is clear to me that certain definite conclusions can be drawn from a chemical analysis of soil by one who is well experienced in such matters. To give a single instance: it has long been known that lime is a necessary constituent of the soil, but it is only within recent years, and as an outcome of work done at the Woburn Experimental Station, that it has been ascertained that it is not sufficient to consider the amount of lime by itself, but that it is necessary also to take the contents of the soil in magnesia into account. Numerous instances might be adduced in which, judging from the figures for lime alone, one would be induced to say that there was a sufficiency of this constituent, but crops have remained poor, and it has ultimately been found that magnesia has been present in excess of the lime. Such instances have occurred, not only in soils of Great Britain, but also in those from the Colonies, where such crops as sugar, coffee, tobacco, &c., are concerned.

I have myself found, when going over farms to advise upon them, that a knowledge of the composition of the soil is frequently absolutely essential to my being able to give recommendations with regard to the proper treatment of the land.

While there has been a tendency for the number of staple analyses, such as those of linseed cake, superphosphate and the

like, to fall off, owing largely to the facilities provided by County Councils, Agricultural Colleges, &c., and also, no doubt, to the security provided by the Fertilisers and Feeding Stuffs Act, it is yet found that the Society's Laboratory is resorted to in matters of real importance, or when more difficult problems, such as those relating to the treatment of soils or the purity of water supplies, are concerned.

As regards the supply of both feeding-stuffs and fertilisers, it must be said that this is really very good at the present time, and that a continued marked improvement has been shown of late years. There will always be, here and there, some new material brought out, or something which, though it conforms to the guarantee given, is sold at a price much above its real value; but, still, it must be allowed that if a purchaser goes to a respectable vendor, he may reckon on being well supplied and fairly dealt with.

It has only been necessary, during the year, to issue one private circular to Members regarding a case of misrepresentation, and the material in question had already been referred to in an earlier Report.

Linseed cake has been uniformly pure, and the same may be said of undecorticated cotton cake. Of decorticated cotton cake, now and again a good sample is met with, but, generally speaking, this cake is found to be hard, and neither well-made nor well-decorticated.

No notable new feeding material or fertiliser has been brought into general use during the year.

Soya bean does not appear to have made much advance in popular favour. Feeding stuffs, in which "prepared sawdust" figures, continue to be sold, but the public is, I think, coming to be aware of the nature of these substances.

Compound meals still require constant watching, for though, as a rule, coming up to the guarantee which has been given with them, it is not unfrequently the case that they contain constituents which are not what they should be. Something more than mere analytical figures is needed in order to guard against this, and a purchaser should know, not merely what the analysis of such compound food is, but whether it is made of constituents to which no objection can be taken.

As regards fertilisers, there is not much to remark, except, possibly, in respect of basic slag. Considerable interest in the question of the solubility of basic slag was aroused by a law case which took place during the year, and in which this matter was brought to the fore. It is important, however, to insist that the point at issue was not whether a basic slag of low quality, and sold at a relatively high price, possessed virtues that other basic slags, which, on the face of it, were of

better quality and more reasonably sold, did not possess, but that this was really a case of "rival traders," and that the issue tried was whether those who had attacked the low quality of slag had not overstepped the limits of fair comment in the circulars which they had issued. The trial in question did no more than show that, so far at least, the prominence attached by some traders to the high solubility of their slags had not been established in practice as against the "total phosphates" content. At the same time, the award in this case does not warrant the verdict being claimed as affording a vindication of a low quality basic slag being sold at what must, on the face of it, be considered a relatively high price.

Kainit is a material which has long, and deservedly, been in use by the agriculturist. It, in common with other salts of potash, some of them natural, some prepared by crystallisation and refining, was obtained originally from the mines in Stassfurt, North Germany, where the different natural salts occur in beds overlying one another, and each known by a particular name according to its nature and chemical composition. *Kainit* is one of these, and is a natural, and not a prepared, salt.

About its exact chemical composition there has always been considerable uncertainty. At first, the pure salt was regarded as composed of sulphate of potash with sulphate of magnesia and chloride of magnesium, and the formula $K_2SO_4, MgSO_4, MgCl_2, 6H_2O$ was assigned to it, as indicating that the potash occurred in the salt as *sulphate* of potash. This view was, however, controverted, and later researches tend to the belief that the potash is really present, not as sulphate but as *chloride* (muriate), and the formula $KCl, MgSO_4 + 3H_2O$ was given to it as more nearly representing its composition. This, with more or less chloride of sodium (rock salt), constitutes the *kainit* of commerce.

Among agriculturists in this country *kainit* has generally been regarded as a crude form of sulphate of potash, containing about 12 per cent. of potash, equivalent to about 23 per cent. of sulphate of potash. It would seem, however, that this is hardly correct, and that in the *kainit* supplied for agricultural use the potash has really always existed as chloride and not as sulphate.

As the potash-mining industry has extended, and wider reaches of country have been explored in which the beds of potash salts are still existent, certain variations in the quality and composition of the different salts found has necessarily been met with, and these have had their effect in somewhat modifying the nature, and, to some extent, the appearance, of the salts put on the market under the name of *kainit*. These

all consist, however, essentially of potash in the form of chloride, together with varying amounts of sulphate of magnesia and common salt.

The presence of magnesium chloride in any considerable amount constitutes an objection as tending to cause the salts to take up water and become deliquescent. Consequently it has been usual to classify the salts according to the amounts of potash and magnesia severally contained, and to designate them by special names. *Sylvinit*, for example, is chloride of potassium with rock salt (chloride of sodium) but with very little magnesia salts; *carnallit*, on the other hand, is a low quality of chloride of potassium with considerable amounts of chloride of magnesium, and also sulphate of magnesia together with chloride of sodium; *kieserit* is practically sulphate of magnesia alone, and *hartsalz* (hard salt) is chloride of potassium with chloride of sodium and about 9 per cent. of magnesia, this being present mainly as sulphate of magnesia.

It is the *sylvinit* (chloride of potassium with chloride of sodium, and with very little magnesia) and the last named salt, *hartsalz*, which are now principally produced and sold in commerce under the name *kainit*. The export of the different salts takes place from different sea ports, and so there may, from time to time, be variations, sometimes more of one kind and sometimes more of another coming forward.

In these ways come about the variations which purchasers sometimes note, and which render them doubtful as to what is being supplied, thereby making them think that perhaps an inferior article is being palmed off.

It is well, therefore, to point out that there is really nothing essential in the particular colour or appearance of the salts, and that if the amount of potash be guaranteed (as is the rule in the trade), and provided that the salt is in fair dry condition and does not deliquesce, the colour may be disregarded.

What, however, is essential is that the supply, under the name of *kainit*, of salts which, like *carnallit*, contain large amount of magnesia salts (chiefly as chlorides) should be avoided, though these may contain 9 to 10 per cent. of potash. Not long ago an attempt was made to introduce the use of these, they being sold on their potash contents alone. These salts, by reason of the chloride of magnesium present, soon became very moist and deliquescent, and great difficulties were experienced in storing and in using them.

Carnallit should never be offered as *kainit*, for the two salts are essentially different, and the purchaser should stipulate for *kainit* and should buy on the base of its containing 12 to 12½ per cent. of potash. Yet other forms of potash salts require to be guarded against. One of these is a salt artificially prepared

from seaweed, and another is one obtained from beet-sugar manufacture. In both of these, as I have observed in earlier reports, potash is partly present as carbonate of potash, and if it be mixed with ammoniacal manures, *eg.* sulphate of ammonia, there is likely to be some loss of ammonia.

I proceed to comment briefly upon special points which have arisen in the course of the year.

A. FEEDING STUFFS.

1. *Linseed Cake.*

Linseed cakes have, with few exceptions, been satisfactory in quality, and almost invariably pure. The following are, however, two instances of low quality cakes:—

	A.	B.
Moisture	9.68	
Oil	6.25	6.21
¹ Albuminoids	35.69	30.81
Mucilage, fibre, &c.	41.20	
² Ash	7.18	
	<hr/> 100.00 <hr/>	
¹ Containing nitrogen	5.71	
² Including sand.	1.39	

"A" cost 7l. 15s. per ton delivered, and was distinctly dear for such quality. "B" had been guaranteed to contain 9 per cent. of oil, and was, accordingly, much below the guarantee.

2. *Cotton Cake.*

Egyptian cotton cakes have been, almost without exception, good. Bombay cotton cakes, however, were not so satisfactory, and in many cases have been very "woolly," and have contained a comparatively high percentage of sand.

I received a sample called "Egyptian screw-pressed cotton cake"; this was guaranteed to contain 8 per cent. of oil and 23 per cent. of albuminoids.

My analysis was:—

Oil	7.21 per cent.
Albuminoids	19.69 "

This cake was not only below the guarantee, but it contained a large amount of husk and wool, being very much more like "Bombay" cotton cake than "Egyptian." The amount of husk and wool that could be separated out mechanically was as much as 61 per cent.

3. *Decorticated Cotton Cake.*

In the course of this year I have received a few samples of this class of cake which have been much more like the decorticated cotton cake of earlier years.

The following are instances:—

	A	B	C	D	E
Moisture . . .			7.88	8.47	7.87
Oil . . .	15.89	20.63	22.98	16.64	17.29
¹ Albuminoids . .	37.75	39.37	36.31	39.75	39.68
Carbohydrates, fibre &c. . .			26.35	28.16	27.84
² Ash . . .			6.48	6.98	7.32
			100.00	100.00	100.00
¹ Containing nitrogen . . .			5.81	6.36	6.35
² Including sand . . .			.05	.05	.10

"A" and "B" were of the brand known as "J.A.B. Peruvian," and cost 8*l.* 5*s.* per ton in Liverpool, for a 40 to 45 ton lot. They were both nice and soft cakes. "C" was of the same brand, but even richer in quality, and I advised the purchaser to get all he could of this cake. "D" and "E" were of the brand known as "F.C. Peruvian," the price being 9*l.* 2*s.* per ton delivered in Ireland. The guarantee was 15 per cent. of oil and 39 per cent. of albuminoids. These last two cakes were neither as soft nor as well decorticated as the preceding ones, but they were still much superior in quality to what is generally met with at the present time.

4. *Rice Meal.*

I commented in my last report upon the high price to which this material had gone. Early in the year I had a sample sent me which gave the following results:—

Oil	10.89 per cent.
Albuminoids	13.06 „

As showing the great fluctuations to which the prices of feeding-stuffs are subject it may be pointed out that while in November, 1912, rice meal cost 6*l.* 15*s.* per ton, in November, 1913, it could be got for 4*l.* 10*s.* per ton! The price of the above sample was 7*l.* per ton.

In this connection it may be well to mention that a material, sold under the name "China rice meal," has been put upon the market, but which I find to be largely adulterated with mineral matter, principally carbonate of lime. This, of course, constitutes a gross adulteration, and the material should not be sold under the name "rice meal."

China Rice Meal (cooked).

Moisture	7.00
Oil	13.33
¹ Albuminoids	13.62
Starch and digestible carbohydrates	33.93
Woody Fibre	5.25
¹ Mineral matter	26.87
	<hr/> 100.00

¹ Containing nitrogen	2.18
² Including sand and silica	2.53
Including carbonate of lime	23.20

5. Bastol Cake.

Samples of this class of cake, which, as I have previously remarked, is composed largely of treated wood-pulp or sawdust with the addition of some food-stuffs, continue to be sent to me. The following is the analysis of a sample received from a Member who complained that his cattle and sheep did not care to eat it :—

Moisture	10.87
Oil	8.88
¹ Albuminoids	27.38
Soluble carbohydrates	31.77
Woody fibre	14.57
¹ Ash	6.53
	<hr/> 100.00

¹ Containing nitrogen	4.38
² Including sand	1.94

This was a sample of "Bastol special fattening cake," and it was sold at 8*l.* a ton.

6. Sugar-beet Pulp.

Under the name of "Protos," a new material, which consists of the dried pulp of sugar beet after extraction of the sugar, has been put upon the market. The following is the analysis of a sample sent me :—

Moisture	8.66
Oil . . . . .	.93
¹ Albuminoids	6.38
Digestible carbohydrates, &c.	66.58
Woody fibre	12.87
² Ash	4.58
	<hr/> 100.00

¹ Containing nitrogen	1.02
² Including sand	1.29

This was made by the Anglo-Netherlands Sugar Corporation, Ltd., at their factory at Cantley, Norfolk, and the price was 6*l.* 10*s.* per ton. I should regard this as a distinctly dear material at the price. The invoice, moreover, contained no guarantee of oil and albuminoids, such as is required by the Fertilisers & Feeding Stuffs Act.

7. *Fish Meal.*

The use of this material as a food for stock has recently been considerably advocated. The following are analyses of four such samples :—

Percentage of :—	A	B	C	D
Oil	4.53	2.46	4.63	4.85
¹ Albuminoids	63.00	47.56	60.81	61.25
² Mineral matter	20.63	35.61	26.25	24.22
³ Containing nitrogen	10.08	7.61	9.73	9.80
³ Including sand . . . . .	.44	.30	.39	.19

The price of "A" and "B" was 13*l.* 10*s.* per ton delivered, and of "C" and "D" 11*l.* 1*s.* 3*d.* per ton delivered. Considering that this is practically a waste material, I should consider the prices, more especially of the first two, decidedly high.

8. *Compound Cake.*

The following is the analysis of a compound cake which was sent to me and which had been improperly described as "Palm nut cake" :—

Moisture	11.43
Oil	9.51
¹ Albuminoids	18.88
Starch and digestible carbohydrates	36.26
Woody fibre	16.68
² Ash	7.24
	<hr/>
	100.00
	<hr/>
¹ Containing nitrogen	3.02
² Including sand	1.99

This cake consisted mainly of cotton seed, earth-nut and rice, but together with these was rape seed and also mustard seed, both of them undesirable constituents of a compound cake.

9. *Feeding Meal.*

A Member of the Society sent me a sample of calf meal, stating that, since the use of it, two calves had died on successive nights. I examined the meal and found that it consisted practically of Linseed meal. The seed, however, was not clean, as it contained 3 per cent. of sand. Moreover I found that, on

digesting it with water, it gave off hydrocyanic acid gas very markedly, and it is quite possible that the loss of the calves was due to this.

10. *Mangolds.*

A Member of the Society sent me samples of two varieties of mangold to compare. "A" was from English seed, and the bulbs were large round-shaped ones; those from French seed were long red mangolds, and were stated to be a cross between beetroot and ordinary mangold.

	A English	B French
Water	89.20	86.20
Albuminous compounds	1.35	1.67
Crude woody fibre	2.38	2.93
Sugar and other soluble carbohydrates	6.09	7.92
Mineral matter . . . . .	.98	1.28
	<hr/> 100.00	<hr/> 100.00
Containing nitrogen . . . . .	.216	.267
Average weight of single roots	7 lb. 6 oz.	4 lb. 1 oz.

While the analyses, as given above, showed that the long red roots contained less water and were in all respects the richer of the two kinds, it must be noted that the weight of roots is considerably less, and this is a factor which must be borne in mind when the relative produce per acre is concerned.

11. *Miscellaneous Feeding Stuff.*

- (a) *Brewery waste.*
- (b) "*Nutrimol.*"
- (c) *Linseed chaff.*
- (d) *Chocolate sweepings.*

The following analyses may be of interest:—

	A Brewery waste	B "Nutri- mol"	C Lin-seed chaff	D Chocolate sweepings
Moisture	9.48	14.46	12.08	4.17
Oil	5.09	5.77	4.55	12.38
¹ Albuminoids	35.25	19.37	10.31	7.06
Sugar, starch, and and other carbo- hydrates, &c.	40.45	51.38	61.06	69.33
¹ Mineral matter	9.73	9.02	12.00	7.06
	<hr/> 100.00	<hr/> 100.00	<hr/> 100.00	<hr/> 100.00
¹ Containing nitro- gen	5.64	3.10	1.65	1.13
² Including sand and silica	2.29	1.54	5.66	3.63

A consisted, as might well be supposed, of cereal grains, among which were barley, oats, wheat, maize and millet, together with the residue of hops.

B consisted mainly of rice and earth-nut, with molasses, but it had also weed seeds such as *chenopodium*, *polygonum* and *spurrey*, together with rape. It was sold on a guarantee of containing 7 per cent. of oil and 21 per cent. of albuminoids, the cost being 15s. per cwt.; besides being below the guarantee, it was a material that I should consider distinctly dear.

C was a material for which 4*l.* a ton on rail in London was charged. It will be noted that it contained a great deal of sand and earthy matters, and it also had weed seeds in quantity. I should consider the material of, at best, small feeding value, and not at all a desirable one to use.

D came from a chocolate factory, and cost 7*l.* per ton. It was not a clean sample, the amount of sand being distinctly high, and the price, in my opinion, is far more than a waste material of this kind should cost. In last year's report I referred to a similar, but better, material, which cost only 3*l.* per ton.

B. FERTILISERS.

In regard to fertilisers generally it may be said that the supply has been very satisfactory, and that purchasers have had very little to complain about. I am not aware of a single case where I have found superphosphate to come below the guarantee given, and the quality of basic slag, speaking generally, has been good and up to guarantee. The number of new materials and of inferior manures sold at a high price has been comparatively small.

1. *Basic Slag.*

The following is an instance of a high quality slag:—

Percentage of:—

Phosphoric acid	19.93
equal to tribasic phosphate of lime	43.55
Phosphoric acid soluble in 2 per cent. solution	
of citric acid	16.06
equal to tribasic phosphate of lime	35.09
Fineness	94.80

This was guaranteed to contain 42 per cent. of total phosphates with 85 per cent. of "fineness," the price being 5*l.* 6*d.* per ton delivered. Not only was the material well above the guarantee, but it was decidedly cheap.

2. *Compound Manure.*

It still occurs occasionally that an inferior material sold under some name such as the above is put forward and charged at an extravagant rate. Such, for instance, is the following:—

Moisture	15.46
¹ Organic matter	14.92
Phosphate of lime	4.11
Carbonate of lime, &c.	36.64
Sand	28.87
	<hr/>
	100.00
¹ Containing nitrogen . . . . .	.75
equal to ammonia . . . . .	.91

This was sold, in the West Riding of Yorkshire, at the price of 50s. per ton, the real value of it being under 1*l.* a ton.

3. *Quail Manure.*

Moisture	11.23
¹ Organic matter	70.19
² Phosphoric acid	1.75
Lime	1.83
Alkalies, &c.	5.07
Sand and earthy matter	9.93
	<hr/>
	100.00
¹ Containing nitrogen	3.66
equal to ammonia	4.44
² Equal to phosphate of lime	3.82

This, it will be noted, contained comparatively little moisture. An objection to it and similar manures is that there is generally a great deal of seed mixed with the droppings, and that this seed is likely to grow up again.

4. *Sludge Manure.*

A sample was sent to me consisting of dried sewage sludge. This was sold at 2*s.* 6*d.* per ton, additional carriage bringing the price up to 5*s.* a ton. The analysis was as follows:—

Moisture	23.34
¹ Organic matter	18.13
Lime	27.66
Phosphoric acid	1.53
Carbonic acid, &c.	21.03
Silica	8.31
	<hr/>
	100.00
¹ Containing nitrogen . . . . .	.90
equal to ammonia	1.09

Of its kind, this is quite a fair material, it containing a good deal of lime, together with 1 per cent. of ammonia and 1½ per cent. of phosphoric acid. It is quite worth getting at

the price, and, on heavy land in particular, it should be distinctly of value. It was in nice dry condition, and was broken into small lumps so that it could readily be applied.

5. *Furnace Dust.*

This is a material of very variable nature. The following is an analysis of a sample sent me, which, I was told, could be got free of charge, and which could be delivered direct on to an adjoining farm :—

Moisture	3.99
¹ Organic matter	18.95
Lime	8.58
² Phosphoric acid	1.72
Oxide of iron, alumina, &c.	41.53
Sand	25.23
	<hr/>
	100.00
	<hr/>
¹ Containing nitrogen . . . . .	.55
equal to ammonia . . . . .	.67
² Equal to phosphate of lime	3.76

Such a material as this might be beneficial to land from a purely mechanical point of view. It would also be worth a few shillings more per ton for mixing with artificial manure. The sample was, however, distinctly alkaline, and it would not do to mix with it sulphate of ammonia or other manures containing ammoniacal salts.

6. *Lime.*

This material is still found to be of very variable quality. The following is the analysis of a distinctly inferior sample :—

Moisture . . . . .	.20
Oxide of iron and alumina	6.60
Lime	51.94
Magnesia	20.71
Carbonic acid, &c.	15.46
Silica	5.29
	<hr/>
	100.00

This cost 1*l.* 5*s.* per ton, and was finely ground. It contained, however, a great deal of magnesia, and was not a well-burnt lime. I consider the price much too high for such a quality.

7. *Mowra Bean Meal.*

A sample was sent me under the above name. It had been recommended for use as a fertiliser, and cost 55*s.* per ton at Yarmouth.

The analysis was as follows :—

Moisture	13.03
¹ Organic matter	74.68
Phosphate of Lime	2.53
Alkalies, &c.	4.59
Sand	5.17
	<hr/>
	100.00
	<hr/>
¹ Containing nitrogen	2.57
equal to ammonia	3.12

This I take to be the same as Mahuá or Mowa bean meal obtained from the *bassia latifolia* tree. The analysis showed it to be not nearly the equal of castor bean meal or other cake-residues used for fertilising purposes, and I should consider it fully high in price.

8. Miscellaneous Materials.

A member sent me a sample of crushed quartz which he wished to give to poultry and other birds in order to supply grit for them.

The material, I was informed, was the refuse from lead mines, and on coming to examine it, I found that it was not merely quartz, but that it contained a good deal of carbonate of lime, and lead and pyrites occurred in it in quantity also, so that it would be very undesirable to use.

The following is a list of the samples submitted to me by members of the Society for the twelve months, December 1st, 1912, to November 30th, 1913 :—

Linseed cakes	16
Uncorticated cotton cakes	20
Decorticated cotton cakes	12
Compound feeding cakes and meals	48
Cereals	9
Bean and pea meals	2
Dried grains	2
Superphosphates	17
Dissolved bones	6
Compound manures	21
Raw and steamed bones	5
Peruvian guano	1
Fish, meat, and bone guanos	8
Basic slag	25
Nitrate of soda	3
Sulphate of ammonia	8
Potash salts	6
Shoddy	42
Refuse manure	2

Lime	5
Soot	5
Waters	67
Soils	31
Roots	2
Milk, cream, and butter	23
Hoofs and Horns	3
Rape cake manure	2
Sewage sludge	1
Miscellaneous	18
Total	410

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ANNUAL REPORT FOR 1913 OF THE BOTANIST.

SEED-TESTING.

THE examination and testing of agricultural seeds has, as usual, formed a considerable portion of the work undertaken in the Botanical Department. Complete analyses involving details of the nature and amount of impurities present as well as the germinating capacity were made on 196 samples, whilst partial analyses involving a germinating test only, or tests for the presence of dodder or comparisons of bulk with samples, were made on 74 samples.

The seeds, as a whole, hardly reached the high standard of the past two years, the falling off being due in the main to the bad harvest conditions of the previous season. If allowance is made for this there was little to complain of in the majority of the samples tested since the germinating capacity was only slightly impaired. The red clovers, sainfoin, and mangold seem to have suffered most. Some exceptionally bad samples, presumably of very old seed, were sent in for analysis.

Four lots of seed sold as English red clover were found to contain seeds of Chilian dodder, which may be taken as an indication that a part, if not the whole, of the seed was not grown in this country. One of the worst samples I have yet seen was sent from Datchet. It contained 10 per cent. by weight of lumps of soil, grains of wheat, barley and rye-grass, the excreta of mice and various weed seeds. The seed itself was shrivelled, and of that dull foxy-brown colour usually associated with clover seed several years old. Two sets of

about a thousand seeds each when set to germinate failed to show the presence of a single seed capable of growth.

Another unsatisfactory series of clover samples was received from the north of England. The guaranteed percentages of germination were as follows:—

Red clover	96 per cent.
Perennial cow-grass	96 "
White clover	90 "

The results of the analyses were:—

Red clover	74 per cent.	germinated	5 per cent.	"hard" seeds
Perennial cow-grass	71	"	5	" "
White clover	75	"	6	" "

As the purchaser was informed, on complaining of the quality of the seeds, that a gross mistake had been made in the analyses I thought it advisable to have a series of independent tests made at the Swiss Seed Control Station at Zurich. These confirmed our own analyses, but we were promptly countered with the argument that the vitality of the seeds had fallen off during the three or four weeks these analyses took. The statement had to be disposed of by yet another series of analyses a month later. It is worth noting that this argument is commonly used by some seed-dealers, and although very few fresh agricultural seeds show any appreciable loss of vitality during the course of a month it is as well to do away with the "excuse" by sending seeds for testing as soon as they are received.

The bulk of the red clover samples consisted of poor-looking discoloured seed which was often shrivelled. It had, however, a higher germinating capacity than its appearance led one to expect. The best looking samples were probably "yearling" seed.

The few samples of sainfoin examined were unusually bad. Each of them was milled and contained large percentages of "hard" seed. One, after repeated tests, gave a maximum germination percentage of only 29 per cent.

White clover, trefoil, and lucerne were well up to the average of former years.

A small number of samples of mangold seed were sent for analysis. Each of them was probably several years old. The best showed a 90 per cent. germination, the worst 53 per cent., whereas good, fresh samples should produce about 150 plants per 100 seeds. "Seeds" of the grasses were well up to the average of former years, probably because the bulk of them had been harvested under more satisfactory conditions than obtained in this country in the autumn of 1912. Two extraordinary grass-seed mixtures were, however, received with inquiries as to their suitability for the formation of

permanent pastures. One appeared to be the "blowings" of a wheat crop grown on land infested with black-grass (*Alopecurus agrestis*) and couch grass since these were the only grass seeds it contained. The other consisted of the screenings of various crops. It contained about 5 per cent. of the seeds of various weed plants occurring in pastures, whilst the useful seeds amounted to about 1 per cent. The remainder was a mixture of wheat, barley, charlock, corn buttercup, goosegrass and wild onion.

PLANT DISEASES.

Enquiries with regard to fungoid diseases of plants were less numerous than in the preceding year—their total aggregating 47. They would have been still less had it not been for a number of outbreaks of wet rot in potatoes during November. For the sake of convenience the more important enquiries are described in short sections devoted to each crop.

Potatoes.—Towards the end of July several members sent specimens of potato foliage in order to ascertain whether the discolouration of the leaflets was due to the attacks of *Phytophthora infestans*. A microscopic examination showed this to be the case and the application of the usual preventive measure, namely spraying with Bordeaux mixture, was recommended. Later reports showed that this effectively checked the further spread of the disease. After the crop had been lifted tubers showing advanced stages of decay were sent in from various parts of the country. In two cases the tubers were from fields which had been sprayed on which it was definitely stated that no disease had appeared. In other cases a late attack had been experienced but as the haulm was dying off, no ill consequences were anticipated. Nevertheless the potatoes began to rot rapidly in the clamps. The disease was apparently the well-known, but little investigated "wet-rot." Cultures were made from the tubers and amongst others a bacterium was isolated having the general characteristics of *Bacillus amylobacter* which is generally considered to be the cause of the decay. In all probability this had attacked tubers already infected by *Phytophthora*.

One undoubted case of the Black Stalk-rot due to *Bacillus melanogenes* was sent from the Lincoln Fens. When plants are attacked the leaves become first a paler green, then yellow, and curl over so as to expose the lower surface. At the same time the base of the stem turns black and watery. An early attack results in the death of the plant. No curative measures are known at present but in view of the fact that the bacterium may find its own way to the tubers and consequently be planted

with the "seed" further propagation from a diseased crop is evidently an unwise proceeding.

In one parcel of tubers sent from the West of England the skins were so covered with rough corky masses that at first sight one suspected the presence of the corky scab fungus *Spongospora scabies*. A detailed examination failed to support this view. The abnormally roughened coats pointed either to the presence of gritty matter, such as coal ash, in the soil or the use of large quantities of kainit in a mixture of artificial manures. Enquiries showed that the soil of the field was largely composed of rubbish from a brickyard which in all probability was responsible for the symptoms.

Mangolds.—The only diseases reported on were the common rust, *Uromyces betae* and the mould *Peronospora schachtii*. The latter is not often met with in quantity in this country and it is problematical whether it causes any serious loss.

Swedes.—Mildew and finger and toe were each received for examination once.

Clovers.—Several enquiries were made with regard to "clover-sickness" not only in red clover but also in lucerne and sainfoin. The disease is undoubtedly very prevalent at present. The advice given was to alter the rotation in such a manner that clovers would not follow clovers more often than once in six years. Under such circumstances the resting bodies of the fungus responsible for the disease should lose their vitality, with the result that no further infection should occur from the soil. Where this course offered special difficulties experimental dressings of lime applied immediately after the harvesting of the covering cereal crop were recommended. It is hoped that the results of these trials will be reported next season.

Wheat.—The one really serious disease brought to my notice was an attack of bunt (*Tilletia tritici*), which was so severe that the complete destruction of the standing crop had to be recommended. There is no excuse for any serious loss from the attacks of this parasite nowadays, for either the well-known blue-vitriol steep or Jensen's hot water treatment of the seed can be relied upon as particularly effective preventive measures.

One of these methods should always be employed before wheat is sown even if one is certain that the standing crop from which seed was saved was free from infected plants. The precaution is necessary, for travelling threshing machines are often contaminated with the spores of the bunt fungus.

Barley.—A single case of "blindness" was dealt with, and measures suggested for controlling it in subsequent seasons.

Fruit.—Each year the same diseases are received for report, namely, peach curl, apple canker, leaf scorch, silver leaf, and strawberry spot. One interesting example of apple mildew (*Podospheera leucotricha*) was examined. The abundant growth of the mildew on the young shoots appeared to be of an abnormal colour, and further observation showed that the parasite itself was attacked by a second parasite, a species of *Cicinnobolus*. The experiments made to determine the cause of leaf-scorch (Journal R.A.S.E., 1912, p. 289) have not resulted in the isolation of any fungus or bacterium to which the disease can be attributed. Spraying with the usual fungicides has had no effect on checking the progress of the scorch—in fact the disease was more prevalent on sprayed trees during the past season than on those left untreated.

Other Crops.—Two outbreaks of white rust (*Cystopus candidus*) were reported on crops of white mustard, but the disease was too slight and the crop at too advanced a stage of ripeness to warrant the application of fungicides. One severe outbreak of celery spot (*Septoria petroselinii apii*) was enquired into, but again the request for help came too late for measures to be taken to control the outbreak.

Amongst other diseases larch canker, mildew on vegetable marrows, garden peas and asters, and a spot disease on tobacco were dealt with.

WEEDS.

No weed seems to have given more trouble in the past season than the common spurrey (*Spergula arvensis*). As the following quotations show, it has been particularly prevalent in newly broken land :—(a) "When I break up any new land, either from heather or grass, for the first year or two I am free from spurrey. After this it increases each year and the better I do my crops the worse the spurrey becomes." (b) "The land was left to run wild forty years ago and broken up nine years since. It is now completely smothered. Acres of oats and barley are destroyed." In this case 200 acres of arable land were infested with "this horrible weed."

Spurrey is a weed characteristic of light soil and a vigorous growth of it generally denotes a deficiency of lime in the soil. Given these conditions it forms a dense mass of herbage from six inches to a foot in thickness, which can completely smother crops of clover, wheat or barley and render the cleaning of root crops a matter of great difficulty.

The most important point to remember, when attempts are made to suppress it, is that the weed is a surface rooting, rapidly growing annual, which forms an abundance of seeds. Every effort should be made to prevent seeding and reinfestation of the land, even should this mean abandoning the crop, sheeping

off the weed and fallowing. Once seeding is permitted, the difficulties of cleaning are enormously increased.

Heavy dressings of lime often effectually rid the land of this weed. Apparently, though, this is not an invariable specific. Where it fails, spraying with a 5 per cent. solution of copper sulphate has been recommended. The trials which we have made show that this kills off the younger plants and prevents many of the older ones from seeding. The spray is not as efficient, though, as it is with charlock, and there is little doubt that it will have to be employed for several seasons to clean the land at all thoroughly.

The red shank (*Polygonum persicaria*), another free seeding annual, has been reported on on several occasions. This occurs most frequently on moist soils which otherwise are in good condition. Continuous surface cultivation in the early summer is usually sufficient to suppress it, but where this is impracticable, a spraying with a copper sulphate solution of the same concentration as above gives satisfactory results.

The question whether the common thistle is spread by means of seeds has led to some correspondence which is worth quoting in view of the fact that the belief still exists that the plant does not produce fertile seeds. A member had had occasion to complain to a neighbour with regard to the thistle-ridden condition of his fields. He was told that this would not affect adjacent fields because no seed was produced. Evidence usually quoted in support of this belief is that drifts of thistledown consist solely of floats. This is true in the main, but the fact is overlooked that the slightest jar, as for instance when the floating seed settles on the ground, leads to the separation of the seed from the float. An examination of ripe thistle-heads should be sufficient to convince any sceptic that it is as well to prevent seeding.

Broom-rape (*Orobanche minor*), a parasite on clover, was reported as causing damage in the south of England. The plant is not uncommon on light soils and is usually to be found pushing its thick brownish shoots above the soil soon after the removal of the first cut of clover. The tuberous base of the stem is attached by suckers to the clover root and obtains its nourishment direct from it. The seeds are dust-like and produced in enormous numbers. There is some evidence to show that they can remain in a dormant condition in the soil for several years. The eradication of the parasite, once it is established, is difficult. Probably the best procedure is to prevent the formation of seed by hand-pulling the flowering shoots and to miss clover once from the rotation. The introduction of the seeds of the pest with the clover seed need not be feared, since the bulk of it ripens and is distributed before

the second crop of clover is cut. Any late-formed seeds, on account of their minute size, are completely removed by cleaning screens.

Methods of checking the spread of clover-dodder have been asked for on several occasions. This dangerous parasite is still often introduced with clover seed, and consequently no sowing should be made without first ascertaining that the seed is free from it. Once it is established it seeds freely, and can, unfortunately, persist for years owing to its habit of attacking plants other than the clovers, such as thistles, knapweed, &c. Thoroughly burning infested patches with straw or chaff is as effective a method of dealing with the parasite as any. Failing this, good results can be obtained by spraying them with an ounce of an arsenical weed-killer dissolved in four gallons of water.

Among other weeds reported on on one or more occasions, were hemlock, chervil, wavy hair-grass, rest harrow, dyers weed, scabious, knawel, creeping buttercup, and gout weed.

General inquiries have been more numerous, and in some cases more interesting, than in former years. One of these was the case of a twenty-acre "cherry orchard planted about thirty years ago. Although each season it presents a splendid blossom there has never been a good crop of fruit, and last year it was very poor." Accompanying the enquiry was a box of flower buds, which the sender thought showed signs of some mildew. However, no mildew could be detected, and as the buds appeared to be normal, arrangements were made for a frequent supply of material during the flowering and early fruiting stages. This was examined microscopically, with the result that both the stamens and the ovaries of the flowers were found to be perfectly normal. Other evidence obtained by bagging young inflorescences indicated that the flowers were sterile with their own pollen. The remedy in such cases is the simple one of introducing a supply of the pollen of another cherry variety at the time when the flowers of the variety of which the orchard consists are fully open. This can be effected either by planting fresh trees of a suitable variety amongst the existing ones, or by grafting some of them with its scions.

A similar case where an orchard of five acres of "River's" plums generally failed to produce much fruit was traced to the same cause.

There is a steadily accumulating volume of evidence to show that the system of planting one variety of fruit only in an orchard is not always desirable. Where its flowers will pollinate and fertilize themselves, if other circumstances are favourable, good crops should result. Where self-pollination results in few or no fruits setting the chances of crop failure

are very considerable. Many experiments are now in progress to determine what varieties are self-sterile and what other varieties are most suitable for inter-planting.

Another case of some general interest could not be investigated as thoroughly as could be wished for. This was concerned with the damage supposed to have been caused to a wheat crop by fumes from a neighbouring factory. The ears, soon after clearing the sheaths, began to wither at the tips and finally died down to empty chaff. Too little material was sent for examination, and this unfortunately was received at too late a stage of growth to be of much value. What information could be obtained pointed rather to an attack of the "take-all" fungus.

Reports were also sent on, amongst others, the following subjects—a botanical analysis of the contents of a wood-pigeon's crop, weed impurities in Chilean oats, the botanical constitution of a food mixture, the effects of waterlogging on crops, varieties of wheat suitable for "dry land farming," fungicides for wheat-steeping, varieties of sainfoin, and on the malting value of several kinds of barley.

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ANNUAL REPORT FOR 1913 OF THE ZOOLOGIST.

THE mild winter of 1912-13 caused the very early appearance of many of the ordinary spring pests, and appeared to be especially favourable to aphid attacks, which were much complained of during the early part of the year. The general character of the more prevalent insect attacks, and of the investigations carried on by the department may be gathered from the following report:—

FOREST TREE PESTS.

Many complaints were received of some of the commoner forest pests during the season, especially of the Pine-shoot tortrix and of the two Larch moths, *Coleophora laricella* and *Argyresthia laevigatella*. Some cases occurred of injury to the roots of young trees by Cockchafer grubs, and as usual the Wood wasp, *Sirex gigas*, was often the subject of enquiry.

It is seldom that box suffers from insect pests, but one case was brought to my notice in which the leaves were greatly disfigured by the work of a fly grub which proved to be of the

genus *Monarthropalpus*. An attack on lime trees by a species of Thrips was reported from Windermere.

Among the insects injurious to timber, complaints were received of the common *Anobium* and *Xestobium* beetles, but in some of the worst cases the beetles belonged to the genus *Lyctus*.

By far the most important case of injury to forest trees brought to my notice during the year was due to the unusual prevalence of the spruce aphid.

THE SPRUCE APHIS (*Aphis abietana*).

Complaints of plant-lice on forest trees are exceedingly common, but the pests generally belong to the genus *Chermes*. The spruce aphid, *Aphis abietana*, has long been established in England, but is ordinarily negligible as a pest, having no appreciable effect on the common spruce, and I can find no record of its occurrence in sufficient numbers to be seriously injurious. This year, in April, reports were received from the Royal Gardens at Kew that many spruce trees were in a very bad condition and some apparently dying, and their failure seemed to be attributable to no other cause than an unprecedented aphid attack. Further reports of similar attacks on *Picea sitchensis* in different parts of the country, and especially in Ireland, came to hand. As this species has been very extensively planted in Great Britain and Ireland during recent years the matter appeared to be very important. Two explanations were possible. A new pest might have been introduced with the Sitka spruce and become greatly more injurious in its new surroundings, or the already known spruce aphid, of which the common spruce is very tolerant, might be finding other species of spruce much more vulnerable.

A visit was paid to the Botanical Gardens at Kew where the attack was severe, and where the presence of all the species and varieties of spruce would make it possible to determine the exact condition of affairs, and Mr. Dümmer kindly showed me the trees. A large number of spruces were entirely brown and apparently dead, and many others presented a very pitiable appearance. At the first sight it seemed hardly possible that the aphid was accountable for such serious results, but close examination left no doubt that this was the case. The sickly trees were smothered in aphid, and every needle which had turned brown was marked with numerous perforations by the beaks of the insects. The species was *Aphis abietana*,—no new pest, but the species already known, though not regarded seriously as a pest in this country.

An inquiry into the varieties of spruce affected gave the following results:—

The common spruce (*P. excelsa*, type variety) showed no sign of having suffered at all, and it was only after some search that specimens of the aphid were found upon it. Some of the ornamental varieties of *P. excelsa* were, however, badly injured, especially the varieties *gigantea*, *aurea*, *hudsonica*, *repens*, *virgata*, and *monstrosa*. It was very noticeable that one variety—*P. excelsa* var *orientalis*—showed no signs of injury whatever.

But the worst cases were those of the more recently introduced American species of spruce, *P. pungens* and *P. sitchensis*; many of these trees seemed as though they could hardly recover from the attack. The facts, then, are these: No new pest is in question, but our old spruce aphid is, under exceptional conditions, capable of greatly damaging *P. sitchensis* and *P. pungens*, and also many ornamental varieties of the common spruce, though the type variety and also the variety *orientalis* escaped injury even when the aphid was unusually abundant. Of course the conditions were highly exceptional. For an aphid attack to occur in such severity and so early in the year as to kill forest trees before the end of April is, I believe, unprecedented, and it may be long before it occurs again. No doubt the mild winter was partly responsible for it. There is one practical lesson to be learnt from the attack. We may disregard the presence of aphid on the common spruce, but on the Sitka spruce it is another matter. In view of the great harm it is capable of doing it will be advisable to watch plantations of young Sitka spruce for its appearance, and, where possible, to wash the trees as soon as the pest does occur.

Mr. Dümmer made an interesting suggestion as to the reason why certain species and varieties of spruce are more vulnerable than others. He points out that the affected trees are generally characterised by the possession of particularly sharp needles, which, he thinks, may deter tits and other birds from clearing off the winter forms of aphid which give rise to the spring attack. The blunter needles of the common spruce do not repel them, and these trees are probably, therefore, more effectually cleared of the hibernating aphides.

FARM AND GARDEN PESTS.

There is little of special interest to record in this section. Some of the spring pests appeared at a remarkably early date, and there was even a case of frit-fly in winter oats. Many enquiries have had reference to clover crops, which in different cases have suffered from eel-worm, clover seed-midge, and weevil grubs, as well as from the fungus *Sclerotinia*. In the autumn there was an unusually severe attack of celery-fly.

Recent investigations have settled some of the points which remained doubtful in the life-history of the pea-thrips, and indicated the proper treatment for it.

THE PEA-THRIPS.

This troublesome garden pest, from which hardly any garden is entirely free, and which in certain years does very extensive injury, failed for a long time to attract the attention it deserved, and was annually passed over in silence in reports on economic entomology. In 1908 I began a serious attempt to elucidate its life-history, and the results were published in my annual report for that year. Some further observations were made by my pupil, Mr. Maulik, and quite recently another old Cambridge student, Mr. C. B. Williams, now at John Innes Horticultural Institute, has been able to furnish evidence upon the only point which still remained obscure. There is little doubt, therefore, that we now have an accurate

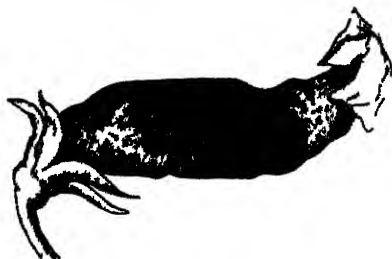


FIG 1—A young diseased pod enlarged

knowledge of the whole life-history of the insect, and as previous accounts have been fragmentary, it is clearly desirable to sum up the various observations in one brief statement.

The disease is first noticeable by the unhealthy appearance of the young pods. Instead of being uniformly green, they present white or straw-coloured blotches, chiefly near the ends, and they usually become distorted and curled. In bad attacks their appearance is entirely spoiled and their yield greatly diminished.

On close examination the young pods are seen to be infested by numbers of small yellow insects of the shape shown in Fig. 2, tipped with black at the posterior end. These are the young or *larvæ* of the pea-thrips, which is itself black and furnished with four very narrow wings fringed with hairs.

The initial stages of the attack were fully investigated in 1908 and described in the report of the *Zoologist* for that year. The female thrips visits the newly-opened pea flowers and lays its eggs in the tissues of the flower, generally choosing the stamen sheath, but sometimes utilising the petals as Maulik has

since shewn. The eggs develop inside the substance of the stamen sheath and the larvæ presently emerge and attack the underlying ovary, which is now developing to form the pod. This they injure, not by devouring its tissue, but by inserting their mouth-parts and sucking the sap, and the infested pod soon assumes the appearance characteristic of the disease.

So far the life-history was clear, but a very important point remained undetermined. Where did the change from the larva to the adult take place and whence came the flies which began the annual attack? Other species of thrips were known to pass the winter in the mature form and it was thought probable that the pea-thrips did the same. The loose bark of old pea-sticks, heaps of leaf-mould and similar shelters were suspected of sheltering them, and the impracticability of dealing satisfactorily with their possible winter quarters made it very difficult to suggest any means of preventing the attack.



FIG 2—Pea-thrips' larva enlarged

But from the investigations of Mr. Williams it appears almost certain that this particular thrips does not pass the winter as a mature insect, but remains as a larva in the soil till the spring, delaying its final changes until the following May, when the flies emerge and find material at hand in the shape of the developing pea blossoms.

It follows, therefore, that the soil in which the peas were grown must be treated in some way to prevent an attack next year, and that instead of searching for possible shelters for the hibernating fly we ought to dress the ground, immediately after the crop is gathered, with some preparation likely to kill the larva which have dropped from the pods fully fed and purpose remaining in the soil till the following spring. The forking in of lime and soot or vaporite, or the injection of carbon bisulphide, or the application of any of the numerous preparations suitable for the destruction of underground insects ought

to have a beneficial effect. Theoretically any time in the winter might be selected for such treatment, but probably the larvæ are more vulnerable immediately after descending to the ground and before they have thoroughly established themselves in their winter quarters.

ANIMAL PARASITES.

In May a remarkable plague of "sand-flies" occurred in the Lake District. These insects, though often a nuisance on a small scale, very rarely occur in such prodigious numbers in this country as to be a serious pest as they often do abroad, especially on the banks of the Danube and in North America.

In the present case the flies seem to have been more or less troublesome for two years past and this year they were so numerous that, in the words of my correspondent, "dogs suffered much; the bellies and udders of cattle were black with them; children came in with their faces covered with blood, and they got up sleeves and trousers and down the neck so that no part of the body was safe from them."

The flies are small, black insects, belonging to the genus *Simulium*, and called in America "buffalo gnats" from the humped appearance of their backs. They are not to be confounded with the true gnats or mosquitoes, nor with the "midges" (*Ceratopogon*), so troublesome, especially under trees, in the summer. The trouble is that instead of breeding in stagnant water ponds, puddles, water-tanks &c., like the gnats, they live as larvæ in the clear water of lakes and rivers. The measures which have proved so successful against mosquitoes are, therefore, of no avail against these flies, and there seems to be little to be done except to dress the cattle with some preparation calculated to warn them off and to hope that their natural enemies will soon come to our assistance.

Mr. Austen, of the British Museum, identified two species as concerned in the present plague.

As usual, several applications having reference to the diseases of animals had to be referred to the Veterinary department. Among the most frequent were complaints of stomach worms in sheep, which cause great annual loss and are most difficult to treat effectually because of the uncertainty that any drug administered will reach the fourth stomach, where the worms live, in an unaltered condition. The whole subject is being investigated by Mr. Pethybridge at Cambridge, and it is hoped that some light will be thrown on the sources of infestation and possible methods of prevention.

Observations on the warble-fly last summer confirmed the view that the eggs are not laid on the back of the cattle but on the hairs on the legs, and this supports the conclusion, arrived

at by Professor Carpenter in Ireland from direct experiments, that *preventive* smearing of the back in the fly season is a useless expenditure of money and labour. Squeezing out the grubs in the spring remains the treatment for this pest, though some prefer to apply an ointment to the warbles and thus to kill the grub inside. If, however, the latter plan be chosen, it has recently been found that equal parts of Archangel tar and paraffin oil are as effective, and less injurious to the hide, as the old composition of train-oil, sulphur and spirit of tar.

In a case of great mortality among some young pheasants the birds were found to have in their crops large numbers of caterpillars which were sent for identification. They were recognised as those of the "Five-spot Burnet" moth. I find no record of these caterpillars being poisonous, but it is quite possible that they may be, for caterpillars of their type of colouration are usually unpalatable, and it is surprising that the pheasants did not instinctively reject them. Possibly the increasing domestication of pheasants is causing them to lose some of their native instincts.

FRUIT PESTS.

Advice has been given, at one time or another, with regard to almost all the usual fruit pests, but only a few points have arisen which are worthy of mention.

Further cases have arisen in which banding against winter-moth has been ineffectual, either because the preparation used has been unsatisfactory, or because it has not been renewed when necessary. It is important to emphasise the fact that the considerable expense of banding the trees is largely wasted unless the preparation really forms an impassable barrier for the moth, is put on early enough, and is renewed if it becomes at all dry.

There were an unusual number of complaints of the leopard moth in orchards. One correspondent attributed the attack to the props used in the orchard, which showed perforations. They were larch props, however, and the borings in them were probably the work of *Sirex* and not of the leopard moth, which does not attack coniferous trees.

Some cases of attack on currant bushes by the rather local currant bud-moth (*Incurvaria capitella*) were reported. An account of this insect will be found in the Report of the Zoologist for 1906. In one instance black currants were stated to be injured by an insect which, on examination, proved to be a capsid bug (*Plesiocoris ruficollis*), which I am not aware has been previously recorded as injurious. The leaves were badly blistered where the insect had been sucking. A case in which some cherry trees, though full of blossom, bore

no fruit, received a good deal of attention, but the cause remains obscure. The buds seemed absolutely healthy and showed no trace of injury by any insect or fungus. Apparently there was simply a lack of fertilisation, due either to the absence of suitable insects or to some other cause. [It is possible that the bee disease may have a wide-spreading influence in this direction.]

THE RASPBERRY BEETLE (*Byturus tomentosus*).

In last year's Report it was stated that an experiment was in progress by which it was hoped to elucidate the points which remained obscure in the life-history of the raspberry beetle. Six raspberry plants were grown in large flowerpots, and when about to blossom fifty beetles were admitted to each, and the plant and flowerpot were enclosed in a muslin bag and kept out of doors, under the same conditions as to temperature and moisture as the other plants in the fruit garden. After the fruiting season it was intended to remove the plants, one at a time at intervals of about a month, to the laboratory, and by thoroughly searching all the contents of the muslin bag, to determine the whereabouts and the condition of the insect at the time of examination.

The first examination was on August 21, by which time the beetles admitted to the plant ought to have laid eggs in the blossoms, and the larvæ from these eggs should have become fully fed on the fruit and dropped to earth. This was found to be the case, numerous larvæ being found in the soil at an average depth of $1\frac{1}{2}$ inches. A few of them had already turned to pupæ.

A month later no larvæ were found, but many pupæ and two beetles. In October almost all the pupæ had changed to mature beetles.

The early appearance of the mature insect suggested the possibility of some activity on its part during the winter. There might be a second brood, either at the root of the raspberry or on some other food plant, but indications of any such habit were sought for in vain in the remaining experimental pots. The beetles were never found on the roots themselves, nor did any of them show any signs of wishing to escape from the muslin enclosure in search of other plants. Indeed they all remained below the soil. Search in the open was equally without result. It had been thought possible that the beetles might visit the blackberry plants in the hedges surrounding the raspberry plantations, but no specimens were found there or elsewhere in the late autumn.

In the light of these experiments, the life-history of the raspberry beetle requires re-stating.

Byturus tomentosus appears about the end of May on the unopened raspberry buds. It is about $\frac{1}{6}$ in. in length and of a yellow and brown colour, being in fact brown with a down of greyish-yellow hairs which are often more or less rubbed off.

They pierce the buds and prevent many of them from developing at all. Later they attack open blossoms and feed upon the stamens and petals. Much harm is done in these early stages, but they are also the parents of the maggots so

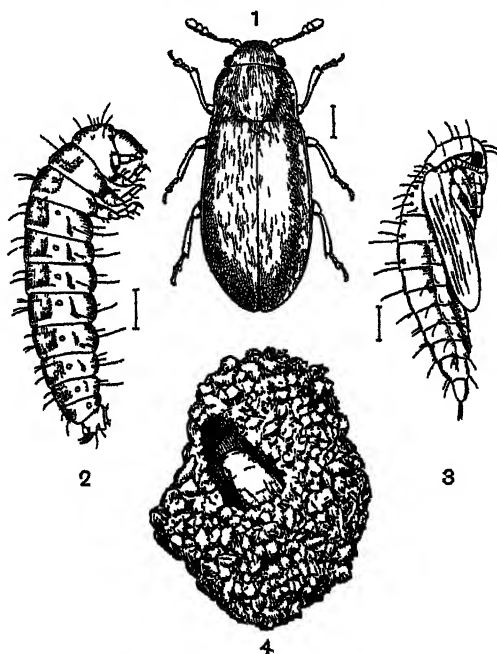


FIG. 3.—The Raspberry Beetle, *Byturus tomentosus*

1, the beetle; 2, the larva; 3, the newly-formed pupa, 4, the pupa in its cavity in the soil, all enlarged, the natural size indicated by perpendicular lines

often occurring in the raspberry fruit. They utilise those blossoms which have escaped destruction to lay their eggs in, and these eggs give rise to maggots which feed on the ripening fruit, attaining finally a length of rather more than a quarter of an inch. They are yellowish-white with fairly distinct brownish plates on the back of the segments, and with two brown curved horns at the tail.

When the crop is gathered it is "maggoty," and greatly depreciated in value, but by this time many of the grubs have

become fully fed and have dropped to the ground, in which they burrow to a depth of about two inches. Towards the end of August they change to pupæ—the resting, chrysalis-like stage of the insect. These pupæ are uniformly formed in the soil: never under the bark or in similar shelters as generally stated. They are quite naked, forming no cocoon, though each occupies a little smooth-walled chamber in the soil. They are at first white, and the legs, antennæ and wings of the future beetles are easily recognisable. Later they shrink and become yellowish, gradually assuming the form of the mature beetle. By the end of September many of the pupæ have changed to beetles, and practically all have done so by the end of October, and the winter is passed in the mature form, which, however, appears to remain inactive until the following May.

Treatment.

The two most important measures to be undertaken are :

(a) The collecting of the beetles, early in the morning, or on a dull day, by shaking the blossoming plants over tarred boards or sacks soaked in paraffin. This has been long practised, and remains the only measure by which the attack, when it has once declared itself, can be mitigated, for any kind of spraying during the blossoming period seems to be impracticable.

(b) Treating the soil, as soon as the crop has been gathered, with some preparation calculated to destroy the grubs which have newly gone to earth before they change to pupæ, and are somewhat less vulnerable. Experiments have been made with various insecticides such as lime, vaporite, carbon bisulphide, &c., and though the precise results in each case are not yet to hand, there was a noticeable decrease this summer in the beetle in plots which had been treated in 1912, though some neighbouring loganberry plants which had been left untreated were badly infested.

MISCELLANEOUS NOTES.

Two of the applications received furnished rather striking evidence of the fact, seldom recognised by agriculturists, that wasps, though a terrible nuisance at times, are, throughout most of their lives, highly beneficial insects. In the first case a correspondent sent me the sweepings of the floor beneath a wasps' nest which had been built in an outhouse in Surrey and they contained hundreds of wings of moths—chiefly of noctua moths and especially of the "Yellow Underwing." These moths are the parents of the "surface caterpillars" so injurious to root and other crops. In the second case a number of wasps

were sent from a nest which had been taken and almost every worker was found to have in its jaws the mangled remains of a "Crane-fly," or "Daddy-long-legs," whose grub is the very destructive "leather-jacket." The harm done by wasps is very obvious, but many people overlook the vast amount of useful work done by them. Every wasp grub is reared on insect food, and as the workers naturally take insects which are for the moment plentiful, their effect in reducing pests must be quite considerable.

A new garden pest occurred in the form of a caterpillar which was reported as destroying hollyhocks and Michaelmas daisies by burrowing in their stems. On examination it proved to be the caterpillar of the "Frosted Orange" moth, *Ochria* (*Gortyna*) *ochracea*. This caterpillar feeds in the stems of various succulent weeds, and its origin in this case was traced to a badly infested patch of thistles near at hand.

Advice has often been given with regard to pests infesting houses and household goods and some more or less interesting cases of this nature were dealt with.

In one case a house was invaded by grain weevils (*Calandra granaria*). They were traced to a neighbouring granary which had lately been cleared out and the surviving weevils, deprived of their food, were wandering in search of more.

Some maggot-infested bacon which was sent for examination was found to be attacked by the cheese-fly, *Prophila casei*, and not by the more usual bacon beetle, *Dermestes lardarius*.

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THE WOBURN EXPERIMENTAL STATION OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

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FIELD EXPERIMENTS, 1913.

THE season of 1913 was an improvement on those of 1911 and 1912. At the same time it was one not unattended with difficulties, for, after a favourable time for the sowing of wheat, the sowing of barley was much delayed owing to the land not being sufficiently dry. A late period for the germination of spring corn was followed by drought throughout June and the early part of July. This caused the corn to be

late in ripening; uncertain weather following after the corn was cut made the in-gathering of the crop difficult. This was especially the case with barley, for, whereas the wheat was got in fairly, the barley was longer in the field, and was prevented, through rain, from being got in good condition.

In the end, the wheat crop turned out to be a heavier crop than in 1912, and the barley was still better.

The same causes as above described made the obtaining of root crops a matter of much uncertainty, and it was only by great care and by keeping the soil constantly stirred throughout the dry weather of June and July that a fair plant could be obtained. Potatoes, however, did excellently, and splendid crops of hay and of "seeds" were obtained.

In view of the desirability of getting the threshing results out early, the plan, adopted for the first time in 1912, of threshing the corn crops direct out of the field instead of stacking them was again carried out. The results, however, were not nearly as satisfactory as in 1912, for the corn had to be got up quickly, and ultimately the quality suffered considerably.

It is quite open to question whether the plan of threshing direct from the field can be always done to advantage. Much must depend upon the particular season and on the particular conditions which prevail at the time of threshing. There is, further, the difficulty of obtaining a threshing machine just at the time it is wanted.

CONTINUOUS GROWING OF WHEAT (*STACKYARD FIELD*) 1913 (37TH SEASON).

No further addition of lime was made to any of the plots, nor other alteration made in the plan.

The plots were cleaned throughout September, 1912, particular attention being given to the presence of *coltsfoot* which had been so prominent on plot 4. Farmyard manure was ploughed in on plot 11b on October 19, 1912; the actual quantity put on was at the rate of 4 tons 6 cwt. per acre, supplying 100 lb. of ammonia. Mineral manures were broadcasted on October 25 over the plots which were to receive them, and "Red Standard" wheat was drilled on the same day at the rate of 10 pecks per acre, the seed having been previously dressed with sulphate of copper.

The seed went in well, and the wheat began to show on November 18. *Coltsfoot* then made its appearance on plots 6, 9, and 11, and was promptly dug up.

Rape dust was applied to plot 10b on March 26, 1913, the quantity being slightly over 4 cwt. per acre, giving 25 lb. of ammonia.

The nitrogenous top-dressings were next applied; the first portions on April 19, and the second on May 20.

The nitrate of soda plots did not this year present the bad appearances which were so marked in 1912. The farmyard manure plot, as usual, looked the best in the earlier stages, but, later on, rape cake (plot 10b) showed a distinct advance, and this plot seemed better than 11b.

Drought throughout June much retarded the growing of the crop, and prevented it from ripening well. This was especially the case with the plots on which sulphate of ammonia had been used.

The wheat crop was cut August 10—15, and was threshed direct out of the field on August 30, the corn being dressed and weighed on September 1. It was subsequently valued in October by Mr. J. Smith, junr., of Bedford.

The results generally are rather better than those of 1912. Of the two unmanured plots 1 and 7, 7 affords the better guide, as the corn of plot 1 was damaged considerably by pigeons and mice when the shocks were standing in the field. The unmanured plot No. 7 gave 14·7 bushels per acre of corn, as against 8·2 bushels only in 1912. The straw amounted to 10½ cwt. per acre.

Mineral manures (plot 4) gave, as usual, a rather lower return than the unmanured plot. Nitrate of soda, when used alone, produced a better crop than sulphate of ammonia, even where lime had been used with the latter. Doubling the dressing of nitrate of soda produced 2 to 3 bushels of corn more than the single dressing, while the addition of mineral manures to nitrate of soda gave an increase of 4 to 5 bushels per acre. Sulphate of ammonia, used by itself, gave, as usual, no crop where lime had not been applied; and plots 2aa (1 ton of lime per acre, in four separate dressings of 5 cwt. each, with sulphate of ammonia) and 2bb (4 tons lime per acre, in two dressings of 2 tons each, also with sulphate of ammonia) gave, both of them, less produce than the unmanured ones, but the sulphate of ammonia plot 2b (on which lime had last been given in 1897) was the best of these limed plots, and showed a distinct gain. The crops of plots 8aa and 8bb showed that the effect of 10 cwt. of lime per acre applied once, in 1905, was dying out, but on plot 5b, where 1 ton of lime per acre had been put on in 1905, 8·6 bushels more of corn were obtained than on the unmanured plot.

There was nothing to show the superiority of potash over phosphoric acid, or vice versa, as a mineral dressing.

The farmyard manure plot, though it did not look so well in the field as the rape cake plot, gave, ultimately, 3½ bushels of corn per acre more. This plot also gave the highest yield of straw in the series, this being 26 cwt. per acre.

Nitrate of soda, generally, produced the most straw, but gave the lowest weight per bushel in the corn.

The corn was valued, as usual, but was found not to be up to the average. It contained a lot of "tail" corn, and was not well matured. The produce of several of the plots, indeed, was not fit for milling.

The complete harvest results, together with the valuation of the corn, are given in Table I., page 394.

CONTINUOUS GROWING OF BARLEY (*STACKYARD FIELD*) 1913 (37TH SEASON).

The land was ploughed in November, 1912, and again in February (12-17), 1913. On February 13, 1913, farmyard manure, giving 100 lb. ammonia per acre, was ploughed in. "Chevalier" barley, at the rate of 9 pecks per acre, was drilled on March 31 over the different plots, the seed having been previously dressed with sulphate of copper. Mineral manures and rape dust were applied immediately afterwards, and the nitrogenous top-dressings on May 9 and May 27.

As with the wheat, so here the nitrate of soda plots ripened much better than those dressed with sulphate of ammonia, though, as stated, the ripening of the corn was much delayed.

The crop was cut on September 1-5, but, owing to rain, it took long to dry, and could not be threshed out until September 17. Even then it was not in good condition, and the quality of the corn suffered greatly thereby.

The harvest results are given in Table II., page 395.

The general results of harvest were distinctly superior to those obtained in 1912. The average of the two unmanured plots (1 and 7) was 6.7 bushels per acre of corn, which was less than in 1912.

Mineral manures alone produced 12.2 bushels of corn per acre, and it is worthy of note that *Equisetum arvense*, which had been such a prominent weed on this plot in 1912, did not now exist to anything like the same extent.

Nitrate of soda used alone gave 15.1 bushels of barley, the doubling of the amount, however, only producing 1.3 bushels per acre more; but the addition of minerals raised the crop to 22.6 bushels when the single dressing of nitrate of soda was used, and to 30.6 bushels per acre with the double dressing. The omission, for a single year, of the nitrate made a difference of nearly 11 bushels.

Sulphate of ammonia by itself (plot 2a) provided, as usual, a blank, as also was the case when minerals only were used with it (plots 5a, 8a, 8b), but no lime. Sulphate of ammonia along with one ton of lime (in four separate applications) on plot 2aa gave 11.9 bushels of corn, and the same with

TABLE I.—Continuous Growing of Wheat, 1913
(37th Season).

(Wheat grown year after year on the same land, the manures being applied every year.)

Stackyard Field—Produce per acre.

Plot	Manures per acre	Head corn		Tail corn	Straw, chaff, &c.	Value per quarter on basis of 32s.	
		No. of bush.	Weight per bushel	Weight			
1	Unmanured	12.3	Lb. 61.2	Lb. 20	C. q. lb. 10 2 8	s. d. 30 0	
2a	Sulphate of ammonia (=25 lb. ammonia)	—	—	12	1 0 1	30 0	
2aa	As 2a, with 5 cwt. lime, Jan., 1905, repeated 1909, 1910 and 1911	12.8	62.5	52	8 3 0	29 0	
2b	As 2a, with 2 tons lime, Dec., 1897	15.5	62.6	64	9 2 0	30 0	
2bb	As 2b, with 2 tons lime (repeated), Jan., 1905	13.3	64.0	112	11 1 21	31 0	
3a	Nitrate of soda (=50 lb. ammonia)	20.8	57.4	80	19 1 7	28 0	
3b	Nitrate of soda (=25 lb. ammonia)	17.4	57.4	54	14 0 11	28 0	
4	Mineral manures (superphosphate, 3 cwt.; sulphate of potash, $\frac{1}{2}$ cwt.)	12.0	60.5	19	11 2 16	31 0	
5a	Mineral manures and sulphate of ammonia (=25 lb. ammonia)	12.7	58.7	44	11 1 8	29 0	
5b	As 5a, with 1 ton lime, Jan., 1905	23.3	62.1	36	15 3 10	31 6	
6	Mineral manures and nitrate of soda (=25 lb. ammonia)	22.6	60.5	60	19 3 14	30 0	
7	Unmanured	14.7	61.3	21	10 1 7	31 6	
8a	Mineral manures and (in alternate years) sulphate of ammonia (=50 lb. ammonia)	5.6	62.0	32	6 1 21	29 0	
8aa	As 8a, with 10 cwt. lime, Jan., 1905	14.4	60.0	56	12 2 2	28 0	
8b	Mineral manures, sulphate of ammonia (=50 lb. ammonia) omitted (in alternate years)	—	—	28	1 1 5	31 6	
8bb	As 8b, with 10 cwt. lime, Jan., 1905	11.0	60.0	60	9 3 4	29 0	
9a	Mineral manures and (in alternate years) nitrate of soda (=50 lb. ammonia)	24.2	60.1	46	22 0 4	30 0	
9b	Mineral manures, nitrate of soda (=50 lb. ammonia) omitted (in alternate years)	15.2	60.7	36	13 2 6	31 0	
10a	Superphosphate 3 cwt., nitrate of soda (=25 lb. ammonia)	18.8	59.2	66	15 3 10	29 0	
10b	Rape dust (=25 lb. ammonia)	19.3	61.5	50	18 1 20	31 0	
11a	Sulphate of potash 1 cwt., nitrate of soda (=25 lb. ammonia)	18.3	58.9	56	16 1 13	29 0	
11b	Farmyard manure (=100 lb. ammonia)	22.8	60.6	42	26 0 0	30 0	

TABLE II.—*Continuous Growing of Barley, 1913*
(37th Season).

(Barley grown year after year on the same land, the manures being applied every year.)

Stackyard Field—Produce per acre.

Plot	Manures per acre	Head corn		Tail corn	Straw, chaff, &c.	Value per quarter on basis of 32s.	
		No. of bush.	Weight per bush.	Weight		s.	d.
1	Unmanured	7.2	Lb. 49 0	Lb. 18	0 2 20	23	0
2a	Sulphate of ammonia (=25 lb. ammonia)	—	—	12	0 2 4	24	0
2aa	As 2a, with 5 cwt. lime, Mar., 1905, repeated 1909, 1910 and 1912	11.9	52.5	24	8 2 4	23	0
2b	As 2a, with 2 tons lime, Dec., 1897, repeated 1912	34.3	51.4	48	18 0 12	26	0
2bb	As 2a, with 2 tons lime, Dec., 1897, repeated Mar., 1905	16.3	52.5	52	9 2 16	26	0
3a	Nitrate of soda (=50 lb. ammonia)	16.4	49.5	30	9 3 4	21	0
3b	Nitrate of soda (=25 lb. ammonia)	15.1	49.2	42	9 2 16	23	0
4	Mineral manures (superphosphate 3 cwt., sulphate of potash $\frac{1}{2}$ cwt.)	12.2	50.5	31	7 2 20	24	0
5a	Mineral manures and sulphate of ammonia (=25 lb. ammonia)	—	—	12	0 2 20	23	0
5aa	As 5a, with 1 ton lime, Mar., 1905	13.1	51.0	32	8 3 4	26	0
5b	As 5a, with 2 tons lime, Dec., 1897, repeated 1912	31.5	51.9	50	16 2 4	27	0
6	Mineral manures and nitrate of soda (=25 lb. ammonia)	22.6	51.2	30	13 0 7	27	0
7	Unmanured	6.2	49.2	13	4 0 3	23	0
8a	Mineral manures and (in alternate years) sulphate of ammonia (=50 lb. ammonia)	—	—	20	0 3 9	24	0
8aa	As 8a, with 2 tons lime, Dec., 1897, repeated 1912	34.1	52.5	72	19 0 24	27	6
8b	Mineral manures, sulphate of ammonia (=50 lb. ammonia) omitted (in alternate years)	—	—	8	0 2 8	24	0
8bb	As 8b, with 2 tons lime, Dec., 1897, repeated 1912	29.1	52.5	32	15 2 24	28	6
9a	Mineral manures and (in alternate years) nitrate of soda (=50 lb. ammonia)	30.6	51.5	40	15 2 24	27	0
9b	Mineral manures, nitrate of soda (=50 lb. ammonia) omitted (in alternate years)	19.8	51.3	22	11 0 10	27	0
10a	Superphosphate 3 cwt., nitrate of soda (=25 lb. ammonia)	26.1	48.0	56	14 2 4	24	0
10b	Rape dust (=25 lb. ammonia)	24.5	49.3	32	13 1 0	23	0
11a	Sulphate of potash 1 cwt., nitrate of soda (=25 lb. ammonia)	32.3	47.6	58	17 0 14	24	0
11b	Farmyard manure (=100 lb. ammonia)	40.2	52.5	68	23 2 26	29	0

4 tons of lime (in two separate applications, 1897 and 1905) 16·3 bushels (plot 2bb), while with 4 tons altogether of lime applied in two dressings in 1897 and 1912 respectively, (plot 2b) as much as 34·3 bushels per acre were obtained, this being rather more than followed the use of the same amount of sulphate of ammonia along with minerals and 1 ton of lime per acre in 1905 (plot 5b, 31·5 bushels per acre). The same amount (4 tons per acre) of lime with the double dressing of sulphate of ammonia (plot 8aa) gave no higher produce, viz., 34·1 bushels per acre. On plot 5aa the 1 ton per acre of lime applied in 1905 would seem to be worked out. It is noticeable that this year more straw was obtained from the use of sulphate of ammonia in conjunction with lime than from nitrate of soda.

Comparing plots 10a and 11a, an advantage would appear to accrue from the use of potash in preference to phosphate; the experience of 1912 was in the same direction.

The farmyard manure plot (11b) gave decidedly the highest yield of all, this being 40·2 bushels of corn and 23½ cwt. of straw per acre, and much in excess of the return from rape dust (24·5 bushels of corn with 13 cwt. of straw per acre).

The valuation of the corn was adversely affected by the inferior condition in which the barley crop was harvested, and it will be observed that in no case was the average for the district reached. This was due entirely to the fact that the crop was threshed direct out of the field.

ROTATION EXPERIMENTS.—THE UNEXHAUSTED MANURIAL VALUE OF CAKE AND CORN (*STACKYARD FILLD*).

- (a) *Series C.* 1910, *Swedes, fed on by Sheep with Cake and Corn respectively*; 1911, *Barley*; 1912, *Green Crops*; 1913, *Wheat*.

The crop of 1912 was trifolium cut for hay, but, as stated in last year's report, the second green crop—rape—which it was intended to grow, did not come up well and was ploughed in.

On October 26, 1912, "Red Standard" wheat was drilled at the rate of 10 pecks per acre. This grew well, and the crop was cut on August 15, 1913. The wheat was threshed, the corn-fed plot on August 30, the cake-fed plot on September 17. The results are given in Table III.

It will be seen that the corn-fed plot gave 4 bushels more corn and 2 qrs. more straw per acre than did the cake-fed plot. It may be remembered that a similar result—one quite contrary to expectation—was obtained with the two previous crops, trifolium and barley, of this series.

TABLE III.—*Series C. Rotation Experiment—the Unexhausted Manurial Value of Cake and Corn (Stackyard Field), 1913. Wheat—after Green-crops.*

Produce per acre.

Plot		Head corn			Tail corn	Straw, chaff, &c.	Value of corn per quarter on basis of 32s.	
		Weight	Bush.	Weight per bushel	Weight			
		Lb.		Lb.	Lb.	C. q. lb.	s. d.	
1	Corn-fed plot . . .	1,632	26 7	61·0	31	20 1 24	32	0
2	Cake-fed plot . . .	1,403	22 7	61·6	22	19 3 15	31	6

(b) *Series D. 1912, Swedes; 1913, Barley.*

The swedes grown in 1912 were partly removed, leaving 12 tons to the acre to be fed on the land. This was done by sheep which consumed first the roots on the corn-fed portion and then passed on to the cake-fed portion. The sheep were on the first-named plot from February 3 to March 9, during which time they consumed, per acre, $\frac{1}{2}$ cwt. of barley, $\frac{1}{2}$ cwt. of oats, and 2 cwt. of mixed oat-straw and clover-hay chaff. After passing on to the second portion, they were fed from March 9 to April 1, consuming, per acre, $\frac{1}{2}$ cwt. of linseed cake, $\frac{1}{2}$ cwt. of cotton cake, and 2 cwt. of oat straw and clover-hay chaff. The land was then ploughed, and on April 3, 1913, "Chevalier" barley was drilled at the rate of 9 pecks per acre. The crop was cut August 29 to September 5, and was threshed out on September 17. The results are given in Table IV.

TABLE IV.—*Series D. Rotation Experiment—the Unexhausted Manurial Value of Cake and Corn (Stackyard Field), 1913. Barley—after Swedes fed on.*

Produce per acre.

Plot		Head corn			Tail corn	Straw, chaff, &c.	Value of corn per quarter on basis of 32s.	
		Weight	Bush.	Weight per bushel	Weight			
		Lb.		Lb.	Lb.	C. q. lb.	s. d.	
1	Swedes fed on with corn . . .	2,216	42·0	52 7	11·8	24 2 2	27	6
2	Swedes fed on with cake . . .	2,054	39·8	52·5	11·0	22 1 11	25	0

It will be seen that the corn-fed plot produced 2·2 bushels more corn and 2 cwt. 1 qr. more straw per acre than did the

cake-fed plot, a result like that above recorded for Series C, and also quite contrary to what would have been expected.

It will be desirable to carry on this experiment to the end of the rotation before attempting to explain the exceptional results obtained in 1913.

GREEN-MANURING EXPERIMENTS.

(a) Stackyard Field. Series A.

Green crops were again grown in 1913. On March 26, spring tares were drilled at the rate of 4 bushels per acre; on May 17 rape seed at the rate of 5 lb. per acre was sown, and on the same day mustard seed at the rate of 1 peck per acre.

All three crops came up well, and were in due course fed on by sheep. The tares were fed from June 28 to July 9, the mustard from July 9 to 15, and the rape from July 16 to 21. In each case 2 cwt. per acre of cotton cake was given to the sheep as well. Second crops of the tares and the rape were sown on July 15 and July 26 respectively, but these did not come to anything, and so were turned in, a second crop of mustard not being sown. Wheat follows on this rotation.

(b) Lansome Field.

In 1912 a wheat crop following the green-manuring had been taken, and it had been decided that, instead of growing green crops again in 1913, a second corn crop following the wheat should be taken in order to see whether it would remove the residue from the land and show any difference in crop as between the ploughing-in of the tares and of the mustard respectively.

Oats were chosen for the purpose, and on February 28, 1913, "Banner" oats, at the rate of 4 bushels per acre, were sown.

The oats came up well, and, as usual, looked—at first—best on the tares plot. Towards the end of April the plots turned very yellow in appearance, more particularly the tares plot. The crops recovered, however, and the oats were ready to cut on August 12, being subsequently threshed on August 30. The results are given in Table V.

From this Table it will be noticed that the differences shown were not large. Taking the half of the area manured with mineral manures, the oat crop on the tares plot was the heaviest, and that after mustard the lowest, whereas on the portion where lime had been applied the mustard plot gave the best return, and then the tares, the rape being the poorest.

Taking the average of the two sets of plots, the tares gave, on the whole, the highest return, and the mustard about $1\frac{1}{2}$ bushels per acre less corn, the rape giving a further bushel per acre less.

TABLE V.—*Green-manuring Experiment (Lansome Field).*

Produce of Oats per acre, 1913—after Wheat.

Plot	Manuring in 1911	Head corn			Tail corn	Straw, chaff, &c.	Value of corn per quarter on basis of 20s.	
		Weight	Bush.	Weight per bush.	Weight			
		Lb.		Lb.	Lb.	C. q. lb	s	d.
1	Tares ploughed in, with mineral manures.	1,102	30.1	36.6	49	11 0 7	19	0
2	Tares ploughed in, with lime	1,078	28.8	37.4	42	11 2 9	19	6
3	Rape ploughed in, with mineral manures.	1,005	27.8	36.1	48	12 0 4	20	0
4	Rape ploughed in, with lime	934	25.9	36.1	39	10 3 2	20	0
5	Mustard ploughed in, with mineral manures.	900	26.3	34.2	43	11 3 11	20	0
6	Mustard ploughed in, with lime	1,057	29.6	35.8	37	14 0 19	20	0

The difference between these sets is by no means so marked as was the case with the wheat crop grown immediately after the green-crops had been ploughed in, and it is clear that the second corn crop has not materially altered the conclusions previously come to as to mustard being, on this particular land, a better green-crop to plough in than tares or rape.

VARIETIES OF OATS.

It was thought desirable to compare in 1913 certain varieties of oats. Among these was "Banner," a Canadian oat which had been grown considerably in the North of England, and which had been extensively tried at the Cockle Park Farm of the Northumberland County Council.

Another variety tried was the New Zealand oat, "Sparrowbill." A nice piece of land for the purpose being available on Road Piece Field, 4 areas of 1 acre each were marked out and sown respectively as follows:—

- Plot 1.—"Banner" (Canadian).
- " 2.—"Abundance" (Garton's).
- " 3.—"Sensation" (Canadian).
- " 4.—"Sparrowbill" (New Zealand).

The oats were drilled on March 25 and 26, 1913, at the rate of 4 bushels per acre, with the exception of "Sparrowbill," the seed of which appeared to be inferior, and, accordingly, 5 bushels per acre of it were sown. By April 16 the oats were well up with the exception of "Sparrowbill," this latter variety

being fully a fortnight behind the others. By August 1, the "Sparrowbill" was still quite green, but the other varieties had changed their colour.

Plots 1, 2 and 3 were cut on August 22, but it was September 8 before plot 4 ("Sparrowbill") could be harvested.

The results are given in Table VI.

TABLE VI.—*Varieties of Oats, 1913.*

Road Piece Field—Produce per acre.

Plot	Variety	Head corn			Tail corn	Straw, chaff, &c.	Value of corn per quarter on basis of 20s.	
		Weight	Bush.	Weight per bush.	Bush.			
		Lb.		Lb.		C. q. lb.	s.	d.
1	"Banner" (Canadian)	1,673	47.5	35.2	77	15 1 20	18	0
2	"Abundance" (Garton's)	1,338	37.2	36.0	61	13 0 12	18	6
3	"Sensation" (Canadian)	1,174	32.9	35.6	54	12 0 6	18	0
4	"Sparrowbill" (New Zealand)	790	21.8	31.8	55	9 0 26	18	0

The respective costs of the seed per quarter were:—"Banner" 26s., "Abundance" 36s., "Sensation" 48s., "Sparrowbill" 35s.

Of the four varieties "Banner" was markedly the best, producing 10 bushels more corn and 2 cwt. more straw per acre than the next best kind, the "Abundance." "Sparrowbill" was much inferior to the others. It has been stated that the "Sparrowbill" seed was noticed to be inferior at the time of sowing, and the results of a particular season may not be conclusive as regards this variety. It is clear, however, that in "Banner" oats one has a kind the use of which might with advantage be extended.

The valuation of the corn showed the samples to have been very badly weathered, and to have contained a quantity of corn not properly matured. The highest value (18s. 6d.) was given to "Abundance" on the basis of 20s. per quarter. The other three varieties were all placed at 18s.

BARLEY EXPERIMENT.

Different rates of seeding.

As a portion of Great Hill came in for barley in 1913, it was thought that it might be interesting to try sowing the same kind of barley at different rates per acre. Accordingly, 4 plots were marked out and sown with barley at the following rates:—6, 8, 10 and 12 pecks per acre.

The barley was "Chevalier" and was sown on March 14, 1913.

The crop was cut on September 8, and the harvest results are given in Table VII.

TABLE VII.—*Barley Experiment—different rates of Seeding (Great Hill).*

Produce of Barley per acre, 1913.

Plot	Rate of Seeding	Head corn			Tail corn	Straw, chaff, &c			Value of corn per quarter on basis of 32s	
		Weight	Bush.	Weight per bushel	Weight					
		Lb		Lb	Lb	c	q	lb	s	d
1	12 pecks per acre	1,728	33·3	51 9	13	13	1	11	29	0
2	10 " " "	1,607	30 7	52 4	26	11	2	26	28	0
3	8 " " "	1,460	27 7	52 8	22	12	3	12	28	0
4	6 " " "	1,641	30 8	53 2	16	14	1	22	28	0

The highest result was obtained from the thickest seeding, though the difference between the highest and lowest rate of seeding was only $2\frac{1}{2}$ bushels of corn per acre. Also the greatest amount of straw was obtained with the thinnest seeding.

The valuer's remarks were that the barley was only just useful for the year and a great deal below the average of fine barleys. On a basis of 32s. per quarter, the highest value, 29s., was given to plot 1 (the thickest seeding), the others being classed alike at 1s. per quarter less.

NITROGENOUS TOP-DRESSINGS ON WHEAT.

Wheat being grown over a considerable portion of Warren Field, it was determined to try in 1913 further experiments upon the influence of different nitrogenous top-dressings.

Nitrate of ammonia, a newly introduced fertiliser, was tried in comparison with sulphate of ammonia and nitrate of soda.

The wheat ("Red Standard") was drilled November 4-6, 1912, at the rate of 10 pecks per acre. On May 28, 1913, the nitrogenous top-dressings were applied, these being given in quantity such as to supply 30 lb. of ammonia per acre. The actual weights per acre so applied were as follows:—

Sulphate of ammonia . . .	119 lb.
Nitrate of soda . . .	153 "
Nitrate of ammonia . . .	70·6 lb. ✓

The crop was cut on August 11, and the harvest results are given in Table VIII.

TABLE VIII.—*Experiment with Nitrogenous Top-dressings on Wheat, 1913.*

Warren Field—Produce per acre

Plot	Manures per acre	Head corn			Tail corn	Straw	Value of corn per quarter on basis of 32s			
		Weight	Bush	Weight per bush	Weight					
		Lb		Lb	Lb	C	q	lb	s	d
1	Sulphate of ammonia	1 796	28 7	62 5	239	26	3	22	31	0
2	No top-dressing	1,654	26·6	62·2	205	24	1	25	31	0
3	Nitrate of ammonia	1,934	31 2	62 0	232	29	2	20	31	0
4	Nitrate of soda	1,870	30 3	61·7	230	30	3	8	31	0

The nitrate of soda cost 12*l.* 5*s.*, the sulphate of ammonia 14*l.* 5*s.*, on rail in London. For nitrate of ammonia no regular price could be affixed, as it has not come into regular use as a fertiliser.

It will be seen that nitrate of ammonia produced the highest result, and about one bushel per acre in excess of nitrate of soda, the latter, however, producing more straw. Sulphate of ammonia was this year hardly so effective, the produce being 1½ bushels less than from nitrate of soda, and the straw 4 cwt. less per acre. The four lots were valued and were all put at the same figure, namely, 31*s.* per quarter, upon a basis of 32*s.* per quarter. They were all much alike, and would just pass for milling purposes.

INFLUENCE OF MAGNESIA ON WHEAT.

Experiments on this subject having for a considerable time been conducted on a small scale in the Pot-culture Station, it was thought well to try it on a larger scale in the field. For this purpose an area ⅙ of an acre in extent, in Lansome Field, and bordering on the green-manuring experiments, was marked out in the autumn of 1912. This was halved; one half was left without treatment, and on the lower half, ⅙ of an acre, 2 cwt. of Magnesia (Mgo.) were spread on November 28, and worked into the top 6 inches of the soil, wheat being subsequently drilled on the two halves.

Previous analyses of the soil had shown this to contain lime, 40 per cent.; magnesia, 20 per cent.; and the addition of magnesia had the effect of raising the magnesia, if reckoned on the first six inches depth of soil, to 40 per cent., or the same amount of magnesia as of lime.

On the untreated portion the wheat came up quite well, but on the treated portion, for some inexplicable reason, great trouble was experienced in obtaining anything like a "plant"

of wheat Where the wheat came, it appeared to be strong, green, and vigorous, but birds made such depredations upon this particular plot that, although repeated dibbling with fresh seed was resorted to right up to springtime, it was never possible to get more than half a "plant." Why the birds should have selected this particular plot for their operations is unknown, but the fact remains that they confined their ravages entirely to this plot, never touching the wheat on the untreated plot, nor the ordinary wheat crop on the remainder of the field.

Though this circumstance spoilt the experiment as a record of comparative weights, it was clear to anyone examining the plots, that where the magnesia had been, there the wheat grew decidedly more strongly, and also tillered out very much better.

The wheat was cut on August 9, was threshed on August 30, and the results, for what they may be worth, are given in Table IX.

TABLE IX.—*Magnesia on Wheat, 1913 (Lansome Field).*
Produce per acre.

Plot	Manuring	Head corn			Tail corn	Straw, chaff, &c
		Weight	Bush	Weight per bush.	Weight	
		Lb		Lb	Lb		O q lb
1	Without magnesia	1,325	23.9	55.5	65	21 1 0
2	With magnesia	1,250	22 1	56.5	70	26 1 0

From these figures it will be seen that the magnesia plot, though there was not much more than half a plant, gave under 2 bushels per acre less corn, and 5 cwt. more straw than did the untreated plot.

Analyses made of the grain gave the following figures:—

Percentage of—	Without magnesia	With magnesia
Moisture	17.50	17.49
Nitrogen	1.62	1.73

The corn was harvested in such bad condition, owing especially to the uneven ripening of the replanted magnesia plot, that the corn valuation, as a comparative test, was of no value. The better tillering and stronger straw of the magnesia treated plot, however, were most marked, and had conditions been more favourable, this plot would undoubtedly have been decidedly the better of the two. The experiment will be repeated in 1913.

Simultaneously with the foregoing, the two small plots outside the pot-culture enclosure, and on which wheat had been grown in 1911 and 1912, were again sown with wheat. It may be here repeated that one plot was that of the natural soil containing lime .77 per cent., magnesia .20 per cent., and the other had magnesia applied to it in November, 1910, to make up the percentage of magnesia in the soil to .40 per cent, the lime remaining the same, viz., .77 per cent.

In 1912 the plot with added magnesia produced half as much again corn and straw as did that without magnesia. No further addition of magnesia was now made, so that the wheat crop of 1913 was the third successive one since the magnesia was applied.

There was no marked difference between the crops on the two plots, and, at harvesting, the results were as follows:—

	Corn Lb.	Straw Lb.	Nitrogen in grain Per cent.	Moisture in grain Per cent.
No treatment	3	4½	1.83	13.36
Magnesia added	3	5½	2.06	13.25

It will thus be seen that there was no difference of corn, but some increase of straw in the third year, resulting from the use of the magnesia.

The corn was collected, and, being under control, was obtained in excellent condition. The value of it was put at 32s. 6d. per quarter on a basis of 32s., this being the same for each of the two lots. The valuer further reported that it was very fine wheat, well grown and in splendid condition, showing both strength and bloom.

The marked difference in quality, and in consequent valuation, between the wheat in this case and that of the corresponding plots in Lansome Field was due entirely to the conditions under which the respective crops were grown and harvested. It emphasises clearly the disadvantage which may result from threshing corn direct out of the field under unfavourable weather conditions.

The high percentage of moisture in the grain from Lansome Field indicates the uneven character of the ripening of the crop, whereas the moisture figure for the grain grown at the pot-culture enclosure was considerably lower. It will be noticed, however, that in each case the grain grown with magnesia contained more nitrogen than that grown without magnesia.

CLOVER AND GRASS MIXTURES.

Series B. Stackyard Field.

On that portion of the field where, in 1912, varieties of barley had been grown, the barley was under-sown with two

different mixtures of clovers and grasses, and in a third instance with wild red clover alone.

The two mixtures differed only in the fact that in one of these ordinary white clover was included and that in the other mixture this was replaced by "wild" white clover.

The actual composition of the seed mixtures used was as follows :—

	1 Lb per acre	2 Lb per acre
Perennial rye-grass	12	12
Cocksfoot .	10	10
Timothy	4	4
English red clover	4	4
Wild white clover	4	—
Ordinary white clover	—	4

The ordinary white clover cost 1s. 6d. per lb., the wild white clover 3s. 9d. per lb., and the costs of the two mixtures per acre were :—1 (with wild white clover), 34s. 6d. ; 2 (with ordinary white clover), 25s. 6d.

After removal of the barley crop, both plots with the mixtures looked very well. The third plot (wild red clover) was not so satisfactory. This latter plot, however, improved very much as the season went on. The differences between the habit of the "wild" varieties and of the ordinary clover were clearly shown in the smaller leaf and more creeping growth of the wild varieties. The plots were cut on June 16 and made into hay, the weights as weighed into the stack being as follows :—

Plot	Seeding	Weight of hay per acre			
		T	c	q	lb
1 Mixture with wild white clover .		3	0	2	4
2 Mixture with ordinary white clover		3	0	2	5
3 Wild red clover (alone) . .		2	6	0	24

It will be seen that these were excellent crops. The season, however, as is well known, was a very favourable one for "seeds." Between the ordinary white clover and the wild white no difference was shown, but the plots will be left for a second year.

A second crop of hay was obtained in each case, but, owing to the plots having been much trampled over by visitors during the season, a comparison of the second crops was not to be relied upon.

VARIETIES OF LUCERNE.

Series B. Stackyard Field.

The lucerne plots which had been laid down in the spring of 1911 and the results of which for 1912 are recorded in last year's report, were kept on. It will be remembered that one-half of each plot had been sown bare and the other half under a corn crop (barley), and that in 1912 the plots sown without a

crop gave decidedly the larger produce; also, as between the different varieties, Russian (Europe) gave much the largest crop, the Canadian lucerne being second best, and then the Provence lucerne.

In 1912 the plots were cut over and tidied up. In April they were horse-hoed, harrowed, and rolled. Though at one time looking very unpromising, the plots all improved greatly during the spring and early summer, and ultimately yielded three cuttings, which were made into hay. The first of these was obtained on June 27, the second on August 20, and the third on November 17. The combined results are given in Table X.

TABLE X.—*Varieties of Lucerne (Stackyard Field).*

Produce of Hay per acre, 1913 (total of three cuttings).

Variety	Sown under a corn crop				Sown bare			
	T	c	q	lb	T	c	q	lb
American (Arizona)	1	13	1	10	1	16	0	18
Canadian .	3	0	3	12	3	4	2	24
Turkestan	1	3	1	1	1	4	2	14
Provence	3	19	1	3	4	5	0	1
Russian (Europe)	4	11	2	4	4	14	3	23
Russian (Asia)	2	5	1	5	2	9	1	2
North American	2	18	1	20	2	19	0	10

It will be seen that once more the portion sown without a crop gave the higher return, though the differences were not nearly so marked as in 1912.

The best crop was again yielded by the Russian (Europe) variety, the second place being taken by the Provence lucerne, these two standing out above any of the others.

The respective prices of the seed per lb. were :—Turkestan, 11d.; Russian, 1s.; American and Canadian, 1s. 1d.; Provence, 1s. 2d. 24 lb. per acre of each were sown.

VARIETIES OF RYE-GRASS (*STACKYARD FIELD*, 1913).

The three small plots sown in 1911 with different varieties of rye-grass were again hayed in 1913, being cut on June 27. The results are given in Table XI. :—

TABLE XI.—*Varieties of Rye-grass (Stackyard Field).*

Produce of Hay per acre, 1913

Variety				
	T.	c.	q	lb
Pacey rye-grass	1	6	1	7
Dutch	0	16	3	19
Italian „	0	19	2	26

The highest yield was that obtained from the Pacey rye-grass, whereas in 1912 Italian rye-grass had given the best result. The Dutch variety again came out earlier, but produced the smallest crop. Owing to drought no second crop was obtained.

INOCULATION OF LEGUMINOUS CROPS.

The small plots sown in the enclosure in Stackyard Field in 1912 were left for 1913, and again cut green, the first crops being taken on June 27 (clover), and July 18 (lucerne), and the second crops on August 20. The summarised results are given in Table XII. :—

TABLE XII.—*Inoculation of Leguminous Crops.*
Stackyard Field—Green Produce per acre, 1913 (two cuttings)

	Seed not inoculated				Seed inoculated			
	T	c	q	lb	T	c	q	lb
Lucerne .	2	11	2	10	3	0	2	2
Red clover	6	10	3	23	7	18	2	26
White clover	5	11	0	12	5	1	0	21

From the above figures it will be seen that in the case of white clover there was no advantage from the inoculation, but with the red clover and lucerne there was in each case a slight benefit.

SOYA BEAN.

Once more an attempt was made to grow Soya bean as a crop. In 1912 the seed, which cost $2\frac{1}{2}d.$ per lb., was sown as late as May, and the plant never came to maturity. It was decided therefore to try earlier sowing, and seed at the rate of 3 bushels per acre was sown as early as March 26. The seed, however, was entirely picked out by birds, and it had to be re-sown on April 21. A satisfactory plant was obtained, but, as in 1912, it never reached proper maturity, though a few pods were here and there produced early in November.

LINSEED.

A quarter acre plot was sown on Stackyard Field with linseed. Six pecks per acre of linseed were put in on March 27, but this failing, the plot was re-sown on May 17. Once more it failed, and ultimately on June 6 the plot was re-sown with Riga linseed, costing 16s. per bushel, and this time the crop came satisfactorily. It was in flower by August 20, and was harvested on November 15.

GRASS EXPERIMENTS.—*BROADMEAD, 1913.*

- (a) Improvement of Old Pasture.
- (b) Varieties of Lime.
- (c) Different Forms of Lime.

(a) Improvement of Old Pasture.

The manurial applications were again given on February 22, 1913, on all the plots with the exception of plot 5, on which the lime was not repeated.

During the whole of the spring and early summer, owing to the shortage of grass land, the plots, though ultimately cut for hay, were for a considerable part of the period grazed by stock, and the results as regards hay produced would consequently be altogether misleading, and so are not given. It may, however, be observed that plots 2 (superphosphate and sulphate of potash, 3 (basic slag and sulphate of potash) and 5 (superphosphate and sulphate of potash following lime) were the best grazed, while plot 6 (farmyard manure) was largely neglected by the stock.

Prof. Biffen received samples of the hay and has supplied the botanical analyses given in Table XIII. :—

TABLE XIII.—*Improvement of Old Pasture (Broad Mead).*

Botanical Examination of Hay, 1913.

Plot	Manuring per acre in 1913	Percentage of		
		Grasses	Leguminosæ	Weeds
1	Basic slag 10 cwt.	88	4	8
	Nitrate of potash 1 cwt.			
2	Mineral superphosphate 5 cwt.	87	6	7
	Sulphate of potash 1 cwt.			
3	Basic slag 10 cwt.	83	10	7
	Sulphate of potash 1 cwt.			
4	No manure	88	5	7
5	Superphosphate 3 cwt.	83	9	8
	Sulphate of potash 1 cwt., after lime			
6	Dung 12 tons	89	4	7

The most striking points brought out by these analyses are the rise in the leguminosæ produced by the use of sulphate of potash, and the diminution of these, with consequent increase of gramineous herbage, following the application of dung. The use of nitrate of potash on plot 1 has had a somewhat similar effect to that of dung.

(b) *Varieties of Lime.*

The different applications were given in 1910. The plots were cut for hay June 21-26, and the weights of hay, together with the results of Prof. Biffen's botanical examination, are given in Table XIV.

TABLE XIV.—*Varieties of Lime on Grass Land (Broad Mead).*

Produce of Hay per acre, with Botanical Results, 1913.

Plot	Lime applied, 1910 ¹	Weight of Hay per acre	Percentage of		
			Grasses	Leguminosæ	Weeds
		T. c q lb			
1	Buxton lime	1 12 1 0	95	3	2
2	Chalk lime	1 13 2 0	93	4	3
3	Magnesia lime	1 14 2 0	95	2	3
4	No lime	1 10 1 0	94	2	4
5	Lias lime	1 14 1 0	92	4	4
6	Oolite lime	1 10 2 0	94	4	2

¹ Two tons per acre in each case

The differences, whether in crop-weight or in botanical composition, are not strongly marked. In general appearance plots 1 and 2 (Buxton lime and chalk lime) seem the best in the field. It will be noticed that the leguminosæ are lowest in amount on plots 3 and 4 (magnesian lime and no lime).

(c) *Different forms of Lime.*

This experiment was only commenced in 1913, the different applications being made on February 12.

The plots were cut and made into hay June 21-26. The weights of hay are given in Table XV.

TABLE XV.—*Different Forms of Lime on Grass Land (Broad Mead).*

Weights of Hay per acre in 1913.

Plot	Lime applied, 1913 ¹	
		T c q lb
1	Lump lime	1 16 2 0
2	Ground lime	1 17 3 0
3	Nothing	1 14 0 0
4	Ground limestone	1 15 3 0
5	Ground chalk	1 19 2 0

¹ 20s per acre (independently of carriage, cartage, &c.) was spent on each plot for the lime used.

It is too early as yet to draw any conclusions, but, so far as the work has gone, ground chalk appears to have done well.

DUNG-MAKING EXPERIMENT, 1912—1913.

It is customary in some parts of the country, more especially in the North of England, to penalise, at the rate of 5s. per ton, the selling of hay off the farm, this representing the loss to the farm. On the other hand, if hay be consumed on the holding, the farmer is allowed 5s. per ton for cartage, and is supposed to get the consuming value of the hay from the increased bulk of the dung produced. It was accordingly considered desirable to ascertain by exact experiment how far the consumption of a certain amount of hay would increase the bulk of the manure produced when the latter was measured in accordance with the usual practice.

For this purpose the special feeding boxes or "pits" at the Woburn Farm were utilised, and were found most suitable. Four bullocks were purchased and placed in these boxes, being fed on a mixed diet of bean meal and crushed oats, together with roots, oat-straw and chaff. To the diet of two of the bullocks an addition of hay was made, and the four bullocks were fed continuously from December 19, 1912, to April 30, 1913, by which time the two bullocks receiving hay additionally had consumed one ton of hay. The different foods given, as also the litter and water supplied, were all weighed, the total quantities fed to each lot of two bullocks during the nineteen weeks being as follows :—

	Lb
Bean meal	133
Crushed oats	133
Roots	5,275
Oat-straw chaff	883
Hay (to hay lot only) . .	2,240
Litter	947

The bullocks receiving no hay took 1,960 lb. of water, those with hay 3,773 lb., or nearly twice as much.

When the bullocks had finished feeding they were removed, the surface of the manure produced was carefully levelled, and measurements of the depth of the manure, taken at different spots over the whole area, were made. Subsequently the manure was removed and weighed. The results obtained were as follows :—

	Volume of manure produced Cubic feet	Weight of manure			
		T	c.	q.	lb.
Box I. (without hay)	204.69	5	5	3	21
" II (1 ton of hay consumed additionally)	259.87	6	15	2	14
Increase due to consumption of 1 ton of hay additional	55.18	1	9	2	21

Analyses of the two lots of manure were made and gave the following results as regards moisture and nitrogen :—

	Moisture Per cent	Nitrogen Per cent
Box I. (without hay) .	75.82	489
„ II (with hay)	74.21	615

It was noticeable that, in the case of the manure made with the additional hay, the straw was broken down very much more and the dung was distinctly better made.

RAINFALL AT WOBURN 'EXPERIMENTAL STATION, 1913. (292 ft. above sea level.)

	Total Inches	No of days with 0.1 in or more recorded		Total Inches	No of days with 0.1 in or more recorded
January	2.84	21	July .	1.29	15
February	1.06	10	August	0.69	9
March	2.50	20	September .	1.65	11
April .	2.36	19	October .	2.65	16
May	1.78	12	November .	2.32	19
June .	1.17	8	December .	0.89	14
Total . . .			21.20 174		

POT-CULTURE EXPERIMENTS, 1913.

I. Hills' Experiments :—

- (a) The influence of Zinc Salts on Wheat.
- (b) The influence of Copper Salts on Wheat.
- (c) The influence of Manganese and Cerium Salts on Wheat.

II. The relation of Lime to Magnesia in Soils.

The addition of Lime to a Soil rich in Magnesia.

III. The use of Sulphur as a Fertiliser.

IV. Experiments on Tomatoes.

- (a) On natural and heated Soil with addition of Lithium Phosphate.
- (b) On natural and heated Soil with addition of Magnesia.

I. The Hills' Experiments—(a) The influence of Zinc Salts on Wheat.

Experiments with zinc salts have been in progress since 1909. The account of these up to 1912, inclusive, was published in the R.A.S.E. Journal for 1912. Up to then the indications

given were to the effect that the presence of anything above .02 per cent. of the metal in a soil would exercise a toxic influence, but that in less quantity zinc might prove stimulating.

In 1912 the salts experimented with were the phosphate, the nitrate and the carbonate, and in amounts containing respectively .03 per cent., .02 per cent. and .01 per cent. of the metal zinc. In that year, however, the whole set of plants were attacked by a species of mildew, and this affected the results so much that it was felt desirable to repeat the work in 1913 on the same lines, and this was accordingly done.

The soil used was that of Butt Furlong, one very fairly supplied with plant food; it contained lime 1.04 per cent., and phosphoric acid .24 per cent.

The experiments were carried out in large earthenware pots, each holding 40 lb. of soil. The salts were mixed with the whole of the soil contained in each pot, and each experiment was in duplicate.

Wheat was sown on November 27, 1912, twelve seeds in each pot, the number of plants being subsequently reduced to six.

On the untreated sets the wheat all came up by December 16; with zinc phosphate and zinc carbonate, even in the larger amounts, the prolongation of the incubation period was hardly marked, but where zinc nitrate had been applied there was a decided prolongation, more especially with the stronger applications. Thus, where .03 per cent. zinc had been used as nitrate, no plants appeared until December 30, and it was forty-three days before the whole twelve showed. With .02 per cent. zinc (also as nitrate) December 19 was the first date of appearance of the plant, and it took thirty-four days for all the twelve shoots to show. With .01 per cent. only twenty-five days were required.

During the earlier stages of growth the zinc phosphate and zinc carbonate plants were much alike in size, and did not differ greatly from the untreated ones, except as regards a marked increase in the tillering. With zinc nitrate much ranker growth and deeper colour of foliage were evident. Where .03 per cent. of zinc had been used the plants were distinctly stunted. In May, the phosphate and carbonate plants were much alike, but the nitrate ones began to show signs of mildew. The foliage also became very limp.

In June it was only in the case of the heaviest application (.03 per cent. zinc) that anything like a toxic effect was shown with carbonate or phosphate. With the nitrate, however, more especially the heavier dressing, this toxic influence was very pronounced, and the tops of the ears were in all cases found to be practically "blind."

The wheats ripened off in August, the nitrate sets being then very ragged in appearance. Photographs were taken of the different sets, and also measurements of the straw and ear. As regards these latter, it will be sufficient to say that, in the case of the phosphate and carbonate, while the application of .01 per cent. of zinc gave about the same length of straw and ear as did the untreated sets, a higher amount of the metal in all instances reduced these measurements. With zinc nitrate there was a still further reduction.

The crops were cut and threshed out, the roots being also at once removed and photographed.

The comparative results of the weighing of corn and straw are given in Table I. In Plate 1 are shown the growing crops where an application of .03 per cent. of zinc had been given in the different forms, and in Plate 2 are figured the roots corresponding to the several plants of Plate 1.

TABLE I.—*Zinc Salts on Wheat, 1913.*

	Corn	Straw
No treatment	100	100
Zinc phosphate .03 per cent. zinc	82	144
" " .02 " "	75 ¹	141
" " .01 " "	99	131
Zinc nitrate .03 " "	34	96
" " .02 " "	68	132
" " .01 " "	127	195
Zinc carbonate .03 " "	79	129
" " .02 " "	83	135
" " .01 " "	99	129

¹ Grain affected by smut.

The duplicates agreed very closely, and the figures given in Table I. are calculated on the average of the duplicates.

It will be seen that in no case did the carbonate or phosphate of zinc give an increase of corn above the "no treatment." There was, however, a general increase in the weight of straw. This was the result of the improved tillering shown throughout the treated sets. From the phosphate and the carbonate there appeared to be no stimulating effect except as regards the increased tillering produced. On the other hand, a new feature was introduced in the production of "blind" ears, as if the presence of zinc had affected the plant at the time of flowering.

With nitrate of zinc, while .03 per cent. of the metal produced a marked toxic effect, which was also present to a less extent when .02 per cent. was used, with .01 per cent. only there was a decided stimulation, both corn and straw being increased.

As regards the roots, it will be observed from Plate 2 that there was a marked difference in the plants to which zinc phosphate had been given and those which had received zinc nitrate. With zinc phosphate the heaviest dressing produced a large root with much feathery development, such as has been previously noticed in these experiments where magnesia has been used. The smaller applications gave less root development, but still more than the untreated. Zinc nitrate, on the other hand, produced a quite different kind of root, and one of a very stunted nature; in the case of the application of '03 per cent. of zinc the root was found to have gone down only four inches into the soil.

From these results it may be concluded that the addition of zinc up to '01 per cent. will have, on the whole, a stimulating result, and produce better tillering, but that above this amount the influence will be one of a toxic nature.

In the form of nitrate the metal will be more active than in that of carbonate or of phosphate.

(b) The Influence of Copper Salts on Wheat.

Copper is one of the metals which had not been previously experimented with at Woburn. Its extensive use, however, in agricultural practice, more especially in the form of Bordeaux mixture for spraying potatoes, fruit trees, &c., made it desirable that an inquiry as to its action on plants should be set on foot. This was more especially the case in view of statements which have been put forward, as the result of water-culture experiments, as to the toxic effect of minute quantities of copper. Co-existing with these was the fact that there is no recorded instance of actual damage resulting from the use of Bordeaux mixture, although the amount of copper salts transferred in this way to the soil in the course of a season must be considerable.

The salts selected for trial were the sulphate and the carbonate. The pots used were the large earthenware ones holding 40 lb. of soil each. The applications given in the form of the two salts contained respectively '0025 per cent., '005 per cent., '01 per cent., '025 per cent., '05 per cent., and '10 per cent. of copper. Each experiment was in duplicate.

Wheat was sown on November 27, 1912, twelve seeds per pot, and the plants were subsequently reduced to six in each pot.

In the untreated pots the seed germinated by December 16. It was only in the case of the heaviest application ('10 per cent. copper) that the incubation was affected, and here the sulphate had a greater effect than the carbonate. In the case of the carbonate the first shoots appeared on December 21, but with

the sulphate not until December 27. This, however, applied to the heavier dressing only; the others did not seem to have any influence on the early growth.

As the plants grew, it was noticed that, while the lighter applications seemed to have no influence (the plants being much the same as the untreated ones), the heavier applications were distinctly behindhand. Not only were the stems of the plants thin, but the plant did not tiller out as well as the others. This was especially the case with the application of .10 per cent. of copper as sulphate, the crop being very poor indeed. The same application in the form of carbonate, while also doing harm, did not appear to be so toxic as when the sulphate was used.

The application of .05 per cent. of copper as sulphate gave a better plant than that of .10 per cent., while that of .02 per cent. was still better, both it and the next lower amount (.01 per cent.) showing advance upon the untreated sets. Smaller quantities did not appear to have had any effect.

Somewhat similar appearances were observed with the carbonate, though, with this, larger amounts of the metal could be advantageously used than was the case with the sulphate.

By July it was clear that anything markedly over .02 per cent. of copper as sulphate would do injury, there being absolutely no crop where .10 per cent. was used, and very little where .05 per cent. had been given.

With the carbonate .10 per cent. alone showed a distinctly toxic influence.

Previously to harvesting, measurements were taken of the straw and of the ears, and also photographs of the growing crops.

With amounts of .02 per cent. and .01 per cent. copper there was an increase in length of both straw and ear, whether the sulphate or the carbonate had been used.

The comparative results of the weighing of corn and straw are set out in Table II. In Plate 3 are given the appearances of the growing crops where sulphate of copper had been used, the roots of the corresponding plants being represented in Plate 4.

Plate 5 shows the crops treated with carbonate of copper, and Plate 6 the roots of the different plants.

The untreated crop with which comparison must be made is (α) of Plate 1.

Table II. gives the results on the average of the two duplicates, which again were very consistent.

It will be noted that when sulphate of copper was used .10 per cent. of the metal was absolutely destructive of the plant, and .05 per cent. nearly so; .02 per cent. and .01 per cent., however, showed stimulating action, more corn and more straw

TABLE II.—*Copper Salts on Wheat, 1913.*

	Corn	Straw
No treatment	100	100
Sulphate of copper .10 per cent. copper .	—	—
" " .05 " " .	18	42
" " .02 " " .	150	110
" " .01 " " .	120	154
" " .005 " " .	104	116
" " .0025 " " .	99	108
Carbonate of copper .10 " " .	50	63
" " .05 " " .	109	99
" " .02 " " .	162	179
" " .01 " " .	123	156
" " .005 " " .	108	126
" " .0025 " " .	103	105

being alike produced. In smaller amounts copper appeared to have no action.

With the carbonate the results were much the same, though not quite so strongly marked; .02 per cent. and .01 per cent. produced increases in both corn and straw, but lower quantities were without distinct effect.

The examination of the roots proved very interesting. With the heavier dressings there was practically no root at all, and the poisoning effect on the plant was clearly shown.

With the heavy dressing of copper, as sulphate, the roots went down only 1½ in. into the soil. With .05 per cent. they were but little better, but with .02 per cent. there was a great change visible, and an extensive and very fibrous root-growth was produced. With .01 and lower quantities the root was much like that of the untreated plants. Carbonate of copper gave similar results, though not so marked.

The general conclusion to be drawn from these results is that copper in quantities not exceeding .02 per cent. will have a stimulating effect, but that above this amount the influence will be a toxic one.

Further, that in amounts less than .01 per cent. of the metal the results will be negative. This latter conclusion is of importance in view of work which has been done in regard to copper salts when water-culture methods have been employed. According to the latter, much smaller amounts than those here employed were found to exert a poisoning effect, and this would seem to indicate that what is found to be the case in water-culture is not necessarily reproduced in the case of plants growing naturally in the soil.

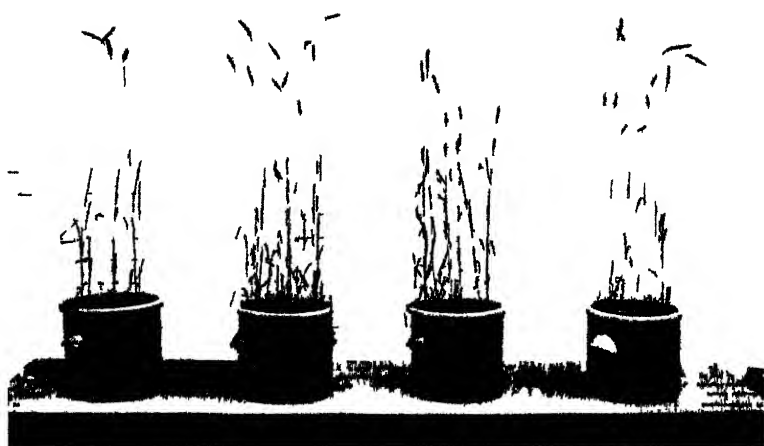


PLATE 1—Zinc Phosphate Zinc Nitrate and Zinc Carbonate on Wheat Season 1911
 (a) No treatment (b) 0.03 per cent Zinc as phosphate (c) 0.03 per cent Zinc as nitrate
 (d) 0.03 per cent Zinc as carbonate

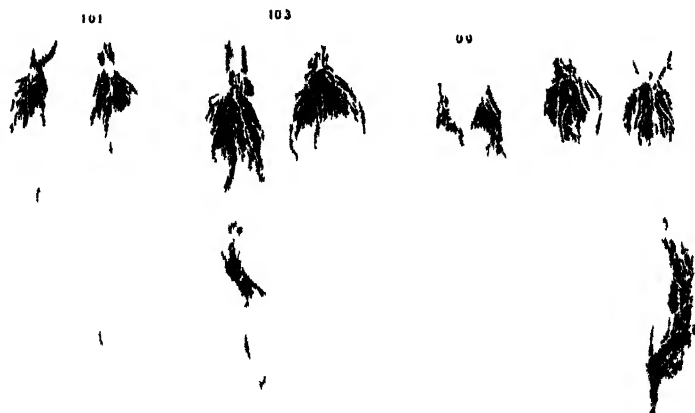


PLATE 2—Zinc Phosphate Zinc Nitrate and Zinc Carbonate on Wheat Season 1911
 Roots of plants in Plate 1
 (a) No treatment (b) 0.03 per cent Zinc as phosphate (c) 0.03 per cent Zinc as nitrate
 (d) 0.03 per cent Zinc as carbonate



PLATE 3 - Sulphate of Copper on Wheat Season 1913

(b) 10 per cent (i) 0.5 per cent (f) 0.2 per cent (i) 0.1 per cent (f) 0.05 per cent
of Copper respectively in soil

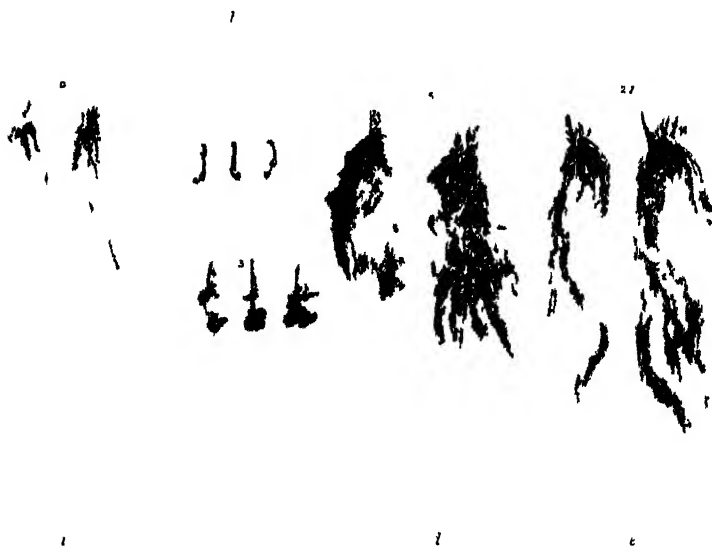


PLATE 4 - Sulphate of Copper on Wheat Season 1913

Roots of plants in Plate 3

(a) No treatment (b) 10 per cent (i) 0.5 per cent (f) 0.2 per cent (i) 0.1 per cent
of Copper respectively in soil

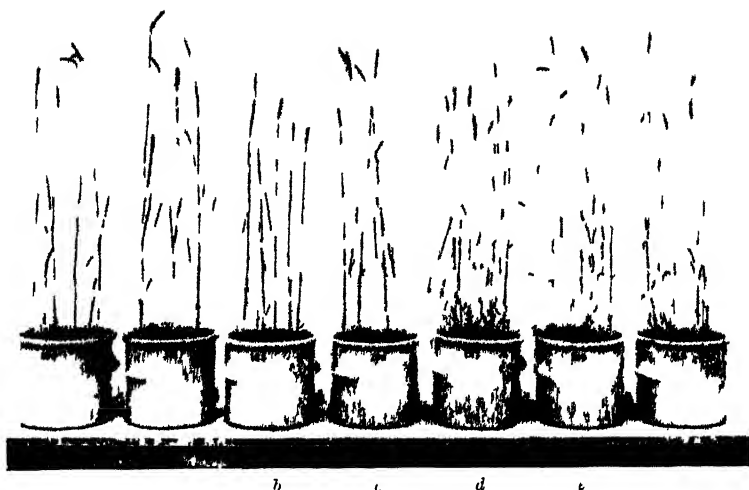


PLATE 5—Carbonate of Copper on Wheat Season 1913

(b) 10 per cent, (c) 05 per cent (d) 02 per cent (e) 01 per cent (f) 005 per cent of Copper respectively in soil



PLATE 6—Carbonate of Copper on Wheat Season 1913
Roots of plants in Plate 5

(a) No treatment (b) 10 per cent (c) 05 per cent (d) 02 per cent (e) 01 per cent of Copper respectively in soil

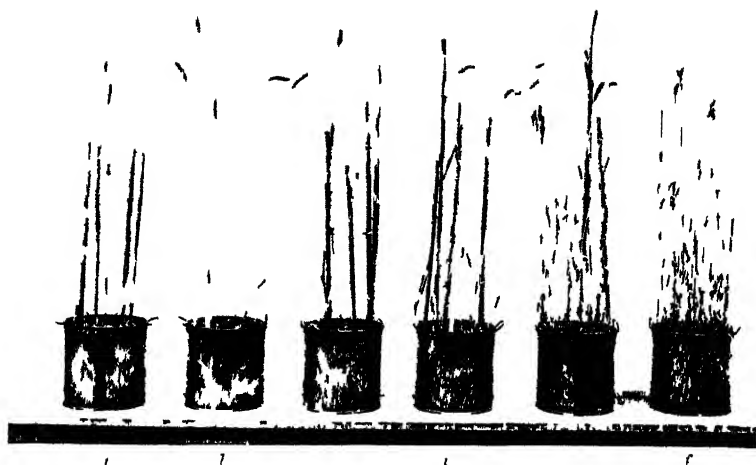


PLATE 7—Lime on Soil rich in Magnesia Season 1911

(a) Natural soil containing Magnesia 2.29 per cent Lime .83 per cent (b) Lime 2.5 per cent
(c) Lime 3 per cent (d) Lime 3.5 per cent (e) Lime 4 per cent (f) Lime 4.5 per cent



PLATE 8—Lime on Soil rich in Magnesia Season 1911
Roots of plants in Plate 7

(a) Natural soil containing Magnesia 2.29 per cent Lime .83 per cent (b) Lime 2.5 per cent
(c) Lime 3 per cent (d) Lime 3.5 per cent (e) Lime 4 per cent (f) Lime 4.5 per cent

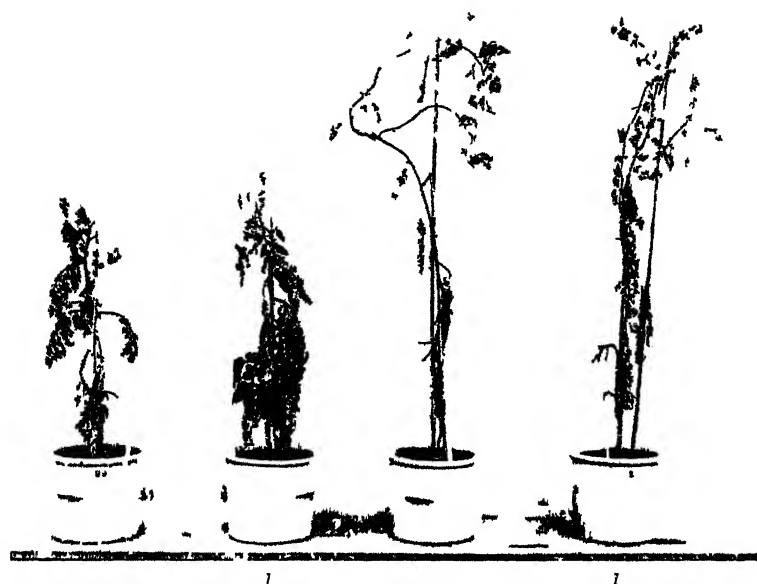


PLATE 9 Lithium Phosphate on Tomato Season 1913
 (a) normal soil (b) heated soil (c) normal soil with 0.025 per cent Lithium (d) heated soil with 0.02 per cent Lithium

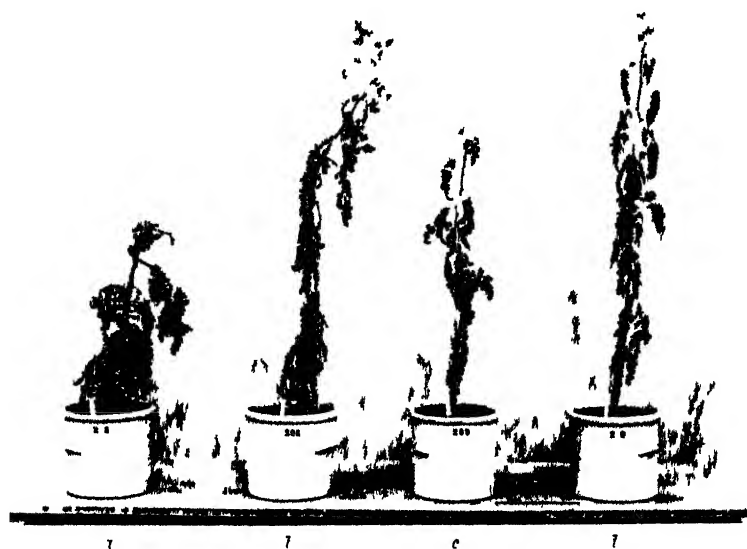


PLATE 10 Magnesium on Tomatoes Season 1915
 (a) normal soil containing 0.73 per cent Magnesium (b) heated soil containing 0.73 per cent Magnesium (c) normal soil containing 1.74 per cent Magnesium (d) heated soil containing 1.74 per cent Magnesium

(c) *The Influence of Manganese and Cerium Salts on Wheat.*

As long ago as 1904, experiments were conducted at Woburn which seemed to indicate that the soaking of wheat seed in a 2 per cent. solution of the sulphate or the chloride of manganese produced some beneficial effect. The phosphate and carbonate of this metal had, however, not been tried as applications to the soil, and it was resolved to carry out an experiment with these salts, giving them in quantity to supply respectively .01 per cent., .005 per cent., .0025 per cent., .001 per cent. of manganese.

Cerium was another metal not hitherto tried, and of this the oxide and sulphate were taken, the quantities given supplying respectively .01 per cent., .005 per cent., .0025 per cent., and .001 per cent. of the metal.

These two sets were carried on side by side with the zinc and copper experiments just recorded, but the results were, in both cases, entirely negative, none of the applications showing any indication of stimulation or of toxic effect. Any further account of this work is, therefore, unnecessary.

II. *The Relation of Lime to Magnesia in Soils.*

1913. *The addition of Lime to a Soil rich in Magnesia.*

The soil experimented on was the Herefordshire one which had been used for the work of the years 1909-12, recorded in the R.A.S.E. Journal 1912.

This soil at the commencement (1909) contained magnesia 2.29 per cent., lime .83 per cent. In that year lime was added, making the amounts up to 1.25 per cent., 1.50 per cent., 1.75 per cent., 2.0 per cent., 2.25 per cent. respectively in five separate pots, a sixth remaining as the untreated one. In 1910 and 1911 no further additions of lime were made, but in 1912 more lime was added, bringing the respective percentages up to 2.5 per cent., 3.0 per cent., 3.5 per cent., 4.0 per cent., and 4.5 per cent. Wheat (this being the fifth crop in succession) was sown on November 26, superphosphate and sulphate of potash were added to the soil, and, later on, a top-dressing of nitrate of soda was given. The germination in all cases was excellent, and by March 13 the lime sets looked distinctly better than the untreated, the latter not having tillered out in the same way as where lime had been applied.

The crop with the heaviest lime dressing (4.5 per cent.) for a time held back behind the others, but, later on, it improved greatly. This was the same application which in 1912 had given a low result as compared with the others.

The whole experiment was of such an instructive nature that it was decided to send it *en bloc* to the Bristol Show, where

it attracted much attention. At the same time, this, as is always the case, affected the plants very much and prevented their subsequent satisfactory development, so that too much weight must not be attached to the quantitative results obtained. These, however, with this reserve, are set out in Table III. Plate 7 shows the growing crops, and Plate 8 the roots of the corresponding plants.

TABLE III.—*The addition of Lime to soil rich in Magnesia, 1913.*

	No of ears	No. of gr ins	Weight of	
			Corn	Straw
No treatment	7	138	Grammes 4.07	13.42
Lime added, to 2.5 per cent	7	244	9.95	16.52
" " " 3.0 "	7	242	10.12	20.12
" " " 3.5 "	12	371	14.55	29.85
" " " 4.0 "	23	703	27.27	53.45
" " " 4.5 "	23	463*	25.15	53.47

*The grain was picked out of 6 ears of this set by a sparrow which found its way into the wired enclosure

It will be noticed that the applications of lime in each case gave a marked increase both in corn and in straw as compared with the untreated set, the increase being the greater as more lime was applied.

The heaviest application (4.5 per cent.) of lime which, as stated, gave a comparatively low result in 1912, would, but for bird depredation, have probably given the highest return. It is reasonable, therefore, to suppose that the lesser produce in 1912 was the result of the application of a considerable quantity of lime in the caustic state. By 1913 the lime, however, would have become carbonated, and accordingly no longer produced any harmful effect.

The lime-treated sets were marked by their darker foliage, the better tillering, and greater length of straw and ear.

In the case of the application of 4 per cent. of lime there were as many as twenty-three shoots from the six plants originally-left, as against seven shoots only in the untreated set from the same number of plants.

It is quite clear from this experiment that the addition of lime to a soil in which magnesia originally is in excess of the lime, will be attended with much benefit, and that no harm, but rather benefit, will result from the presence of lime in excess; whereas from previous experiments it has been shown

that the addition of magnesia in excess would, on the contrary, have had a deleterious effect.

The experiment strengthens the belief that where, on soils of this character, crops are found not to do well, the most probable cause is the high proportion of magnesia contained in them to the lime present, and that the remedy is to be found in the liberal application of lime until the magnesia is no longer predominant.

III. *The use of Sulphur as a Fertiliser.*

About a year ago the Agricultural Papers contained accounts of experiments conducted in France and in Germany which seemed to show that small dressings of flowers of sulphur increased the yield of certain crops.

It was considered desirable, therefore, to make a trial of this at Woburn. The crops selected were mustard, rape, and clover. Shortly before sowing, flowers of sulphur equivalent to dressings of 3, 6, and 12 cwt. per acre respectively were added to the soil in which the crops were to be grown, the sulphur being mixed with the last 4 lb. of soil used to fill each pot. The experiment was conducted in duplicate.

All three crops came up quite well, but from beginning to end there was no influence indicated, either in a beneficial or a detrimental direction, nor did the weights of the crops ultimately obtained show any practical difference, so that it is sufficient to state that, so far as these crops were concerned, the use of flowers of sulphur in amounts between 3 and 12 cwt. per acre was without any influence.

IV. *Experiments with Tomatoes, 1913.*

(a) *Natural and heated soil with addition of Lithium Phosphate.*

(b) *Natural and heated soil with addition of Magnesia.*

The influence of lithium salts and magnesia has been already tried at Woburn on wheat with striking results, but not with other classes of crops. It was thought well now to study their influence on other plants such as the tomato.

In addition, it was thought well, in view of recent work done on the heating of soils, to see if the effects of these additions differed according as whether a normal soil or one that had been heated was employed. The soil used in 1913 was a made-up one composed of old rotted turf, sharp sand, and finely ground limestone. An analysis of it showed it to contain :—

	Per cent
Organic matter	7.313
Lime	1.652
Magnesia . . . . .	.396
Nitrogen . . . . .	.259

One-half the number of pots were filled with the soil in its natural state, the other half with soil which had been previously heated to a temperature of 80° C.—100° C., the arrangement for heating the soil being such as to obtain a *moist* heat and not a *dry* one.

The additions of lithium phosphate determined upon were .0025 per cent., and .005 per cent. of the metal. Those of magnesia were based upon the magnesia contained in the soil (.396 per cent.), and the total magnesia was increased to .792 per cent., 1.188 per cent., and 1.584 per cent. respectively. The materials to be added were thoroughly mixed with the whole of the soil contained in each pot. It will be noted, in regard to the additions of magnesia, that with the highest amount an equality between the lime and magnesia was practically reached.

The main object in using the natural and the heated soil side by side, was to ascertain whether the heating of the soil would remove any of the toxic properties possessed by the subsequently applied lithium phosphate and magnesia, it having been suggested that the harm done by these to plant life is due to the influence which they exert on the bacterial constituents of the soil. One might therefore suppose that the heating of the soil would obviate such injury.

The tomato plants were raised in a seed-bed of ordinary soil, and when they had obtained a growth of about six inches they were planted in the respective pots. This was on May 12, 1913.

Within two days of their planting, differences began to appear. In the natural soil without any addition there was more rapid growth than in the heated soil. The leaves of the plant were, however, much lighter in colour than were those of the heated soil, the latter being stronger and more robust plants, and of distinctly dark green colour. Where lithium phosphate had been added in small amount the growth was retarded in both the natural and the heated soils, and the leaves soon began to turn yellow and to curl up. With the heavier application of lithium phosphate on the natural soil the growth was also much retarded, this being even more the case with the heated soil, the plant on the latter being decidedly small, and presenting a scorched appearance. The addition of magnesia produced somewhat similar effects, these being more marked on the heated soil than on the natural, and also more pronounced with the heavier than with the lighter application.

The plant grew on, and, as the season advanced, some of the earlier effects passed away; but, speaking generally, the plants in the natural soil were taller, but weaker and lighter in colour than those in the heated soil. The applications of lithium phosphate to the natural soil seemed to show hardly

any effect in the case of the lighter dressing, but with the heavier a distinctly toxic effect was produced. The heating of the soil, moreover, did not in any way get rid of the poisonous influence of the lithium salt. The appearances presented in these latter cases were most striking. It seemed as if on the heated soil a tremendous growth was first obtained, the plants throwing out fresh leaves, only to be destroyed, or partly so, by the toxic influence of the lithium; a new growth was then sent out, and this, in turn, arrested, the general result being that the plants were never really able to produce fruit properly.

With magnesia the results were somewhat similar, especially with the heavier application, but not so marked. It would seem that there was no great change so long as the lime remained in good excess, but when the addition of magnesia increased the amount to about that of the lime present, much the same results were found as have been noted previously in the case of wheat.

Ultimately the fruit was gathered from each pot, and the comparative results are set out in Table IV. Plate 9 gives the appearance of the pots to which lithium phosphate had been added, and Plate 10 those where magnesia was the addition.

TABLE IV.—*Lithium Phosphate and Magnesia on Tomatoes, 1913.*

Comparative weights of fruit produced.						
Normal Soil	.	.	.	.	.	100
" "	with	0025 per cent. Lithium	.	.	.	29
" "	"	005 "	.	.	.	37
" "	containing	792 " Magnesia	.	.	.	89
" "	"	1 188 "	.	.	.	113
" "	"	1 584 "	.	.	.	12
Heated Soil	.	.	.	.	.	173
" "	with	0025 per cent. Lithium	.	.	.	71
" "	"	005 "	.	.	.	14
" "	containing	792 " Magnesia	.	.	.	131
" "	"	1 188 "	.	.	.	96
" "	"	1 584 "	.	.	.	22

From these results it would appear that the toxic effects of both lithium phosphate and magnesia are more decided with tomatoes than with wheat. In no case has there been anything like the increase in crop which mere heating of the soil has effected.

A remarkable feature in the addition of magnesia is that there was so little advantage from using heated soil as compared with the normal soil. A small side experiment was simultaneously conducted with magnesium carbonate in place of magnesia in order to see whether causticity might not be the reason of this, but it was found that the carbonate acted practically in like way as the oxide.

Whether the results from the use of lithium phosphate and magnesia are to be explained as the outcome of direct chemical action on the plant, or as that of influence on the bacterial nature of the soil, remains a matter for further inquiry, but that these bodies do exert a striking influence upon the plant and produce marked changes in the soil to which they have been applied, is abundantly exemplified by these experiments.

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AGRICULTURAL STATISTICS.

BY the kindness of the Board of Agriculture and Fisheries in supplying early copies of certain of the Agricultural Returns compiled in the form required for comparative purposes, it is once more possible to include the most recent statistics affecting British Agricultural interests in the Society's Journal.

ACREAGE OF CROPS.

The first Table, "Acreage under Crops and Grass, and Number of Live Stock" gives the numbers for England, Wales, Great Britain and the United Kingdom, for the beginning of June, 1912 and 1913. The area under crops and grass last year showed a decrease of 39,698 acres in England, 68,723 in Great Britain, and 52,433 in the United Kingdom.

Arable Land showed a decrease of 234,994 acres in England, or $2\frac{1}{2}$ per cent., and 300,116 acres in Great Britain, or 2 per cent. Permanent Pasture showed an increase of 195,296 acres, or just under 1.5 per cent. in England, and 231,393 acres, or 1.25 per cent. in Great Britain.

The total area last year under corn crops in Great Britain was 6,921,792 acres as compared with 7,151,676 acres of the year before, showing a decrease of 29,884 acres. In England the area last year was 5,386,958 as compared with 5,581,665, showing a decrease of 194,707 acres.

In the case of individual crops Wheat decreased by 158,499 acres, or 8.5 per cent. in England, and by 169,365 acres, or 8.7 per cent. in Great Britain. Barley on the other hand showed an increase in England of 104,737 acres, 7.6 per cent., and in Great Britain an increase of 108,903, or 6.6 per cent. Oats showed a decrease of 93,322 acres, or 5 per cent. in England, and 116,438 acres, or 3.9 in Great Britain; Rye a decrease of 4,247 acres in Great Britain; Beans a decrease of 11,175 or 3.9 per cent. in Great Britain; and Peas the considerable decrease of 37,562 acres, or 18 per cent. in Great Britain.

Taking crops other than corn, we find Potatoes decreased by 20,251 acres in England, and 21,556 acres in Great Britain; Turnips and Swedes, 19,026 in England, and 27,001 in Great Britain; Mangolds, 64,100, or 13·3 per cent. in England, and 67,191 or 13·7 per cent. in Great Britain; whilst "Clover, Sainfoin and Grasses under rotation" increased by 2,434 in England, and decreased by 21,145 in Great Britain. There was a big decrease of acreage under this crop in Wales. Bare Fallow in England increased by 11,916 acres, or 41½ per cent., and in Great Britain by 41 per cent.

LIVE STOCK.

In England, Horses used for agricultural purposes decreased by 89,939, or just under 11 per cent. For the United Kingdom there was a decrease of 7 per cent. in this class of horse.

The total number of horses for the United Kingdom shows a decrease of 6 per cent., and there was a decrease of 3,402 horses in England.

Cattle during last year dropped in numbers 1·8 per cent. in England; the chief decrease was in cows or heifers in milk, for here there was 6·7 per cent. less than the previous year. For the United Kingdom cattle increased by 21,965, the increase being due to Ireland.

Sheep again decreased by 4·6 per cent. for the United Kingdom, and in England they have dropped by 5 per cent. to the total of 13,736,438. Breeding Ewes in England showed a decrease of 6 per cent. Pigs once again show a considerable decrease, amounting to 17 per cent. for the United Kingdom, and just under 15·7 per cent. for England. There was a large drop in the number of Sows kept for breeding, in England, the decrease being 15 per cent.

PRODUCE RETURNS.

The Wheat crop last year produced in Great Britain 5,675 quarters, or about ·75 per cent. less than the previous year. The decrease in England was ·5 per cent., but the yield per acre for Great Britain was very near to the average of the last ten years. Scotland and Wales also showed a decrease, though the yield per acre in both these countries was above the average.

Barley considerably increased in yield in England and Great Britain, the amount of increase being 15 per cent. and 13 per cent. respectively. The acreage under Barley was considerably increased last year and this accounts for the greater returns as the yield per acre was below the average, except in the case of Scotland.

Oats, after showing a decrease for the two previous years, last year showed an increase of 138,561 quarters, or 1 per cent.

[Continued on page 424].

TABLE I.—Acreage under Crops and Grass; and Number of Live Scotland, Great Britain, Ireland, and the United Kingdom

	England		Wales		Scotland ⁴	
	1913	1912	1913	1912	1913	1912
	Acres 32,389,114		Acres 4,749,851		Acres 19,070,194	
Total Area (excluding water)						
Total Acreage under Crops and Grass ¹	24,874,793	24,414,493	2,751,587	2,760,197	4,797,910	4,821,334
Arable Land	10,361,849	10,596,543	696,384	738,433	3,501,954	3,325,027
Permanent Grass ²	14,012,946	13,817,950	2,055,203	2,021,764	1,495,955	1,496,307
Wheat	1,663,453	1,821,952	38,185	41,412	54,764	62,373
Barley or Bere	1,499,781	1,365,044	89,075	91,484	198,248	191,673
Oats	1,772,247	1,865,569	202,453	206,910	937,918	958,575
Rye	51,037	53,009	469	1,124	5,190	6,810
Beans	267,003	275,729	1,276	1,272	5,968	8,421
Peas	165,437	200,362	807	773	713	1,184
Potatoes	416,897	430,948	25,338	25,855	149,080	149,768
Turnips and Swedes	996,932	1,015,958	56,463	56,985	432,139	439,542
Mangold	409,150	473,250	10,306	12,414	1,839	2,822
Cabbage	54,626	60,545	796	877	5,222	5,369
Kohl-Rabi	14,272	20,241	159	111	10	48
Rape	62,422	74,294	4,973	5,081	7,758	6,972
Vetches or Tares	100,414	129,169	531	646	11,187	8,182
Lucerne	57,013	36,073	265	302	9	33
Hops	35,676	34,829	—	—	—	—
Small Fruit	75,784	76,887	1,073	1,110	7,135	7,144
Clover, Sainfoin, and Grasses under Rotation	2,230,510	2,237,071	256,322	285,942	1,474,052	1,468,016
Other Crops	131,260	130,724	1,394	1,509	2,478	3,204
Bare Fallow	361,115	269,199	6,789	4,528	8,236	7,021
Horses used for Agricultural purposes ³	No. 736,795	No. 816,734	No. 80,521	No. 89,489	No. 139,018	No. 147,917
Stallions	6,593	6,763	1,463	1,689	1,224	1,202
Unbroken } One year and above	184,809	190,888	33,128	35,756	30,504	30,823
Horses } Under one year	84,312	85,380	21,542	21,502	13,535	13,078
Total	1,002,449	1,099,567	138,654	148,436	183,301	193,020
Other Horses	339,400	145,684	21,643	12,323	21,140	12,247
TOTAL OF HORSES	1,241,849	1,245,251	160,297	160,759	204,441	205,267
Cows and } In milk	1,501,760	1,610,742	205,868	238,194	363,448	361,851
Heifers } In calf but not in milk	497,291	451,465	59,634	47,518	67,540	74,610
Other Cattle:—Two years and above	1,050,535	1,017,004	100,090	95,191	273,161	232,375
" " One year and under two	980,333	1,052,021	171,302	186,496	301,451	279,063
" " Under one year	952,259	955,223	139,022	186,566	241,310	236,166
TOTAL OF CATTLE	4,991,208	5,087,455	725,796	754,265	1,240,010	1,184,976
Ewes kept for Breeding	5,273,345	5,652,966	1,423,946	1,495,143	2,913,998	2,971,489
Other Sheep:—One year and above	2,852,044	2,881,980	768,561	762,731	1,214,457	1,271,067
" " Under one year	5,809,049	5,998,743	1,201,341	1,291,102	2,672,671	2,761,811
TOTAL OF SHEEP	13,734,438	14,504,489	3,393,848	3,548,976	6,801,126	7,004,367
Sows kept for Breeding	246,987	291,184	33,888	42,897	14,713	19,668
Other Pigs	1,664,553	1,978,970	156,694	183,619	117,040	139,459
TOTAL OF PIGS	1,911,520	2,270,154	190,582	226,516	131,753	159,127

¹ Not including Mountain and Heath Land.² Including Mares kept for Breeding.³ Above two years old used, or intended to be used, for service.⁴ Furnished by the Board of Agriculture for Scotland.⁵ Figures for Jersey include Water.

Stock, as returned on June 4, 1913 and 1912, in England, Wales, (including the Isle of Man and the Channel Islands).

	Great Britain		Ireland ⁷		United Kingdom.	
	1913	1912	1913	1912	1913	1912
Total Area (excluding water)	Acres 56,208,959		Acres 20,247,197		Acres 76,446,156	
Total Acreage under Crops ⁸ and Grass ¹	81,927,301	81,996,024	14,691,357	14,673,778	46,741,314	46,793,747
Arable Land	14,380,187	14,660,303	4,978,580	4,988,561	19,431,716	19,746,876
Permanent Grass ¹	17,567,114	17,335,721	9,712,977	9,685,227	27,300,598	27,046,871
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Wheat	1,756,372	1,925,737	34,004	44,855	1,791,569	1,971,801
Barley or Bere	1,757,104	1,648,201	172,948	185,367	1,932,321	1,816,426
Oats	2,912,616	3,029,064	1,048,813	1,048,000	3,963,448	4,096,111
Rye	56,698	80,943	6,728	7,765	63,538	68,779
Beans ⁹	274,247	285,423	1,264	1,421	275,626	286,944
Peas	164,757	203,319	211	279	165,121	202,742
Potatoes	501,115	612,671	562,308	595,184	1,184,857	1,219,683
Turnips and Swedes	1,485,534	1,512,535	276,596	271,771	1,770,079	1,792,523
Mangold	421,285	488,488	78,814	81,700	501,093	571,451
Cabbage, Kohl-Rabi and Rape	150,198	173,538	38,212	41,060	189,045	215,946
Vetches or Tares ⁹	112,132	137,867	2,267	2,008	114,710	140,315
Hops	35,676	34,829	—	—	35,676	34,829
Small Fruit	83,982	85,141	15,734	15,213	100,094	100,747
Clover, sainfoin, and Grasses under Rotation	3,989,884	3,991,029	2,630,097	2,630,495	6,643,148	6,668,701
Other Crops ⁸	192,429	191,665	90,494	85,428	284,983	279,847
Bare Fallow	396,140	280,746	—	—	396,472	281,231
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Horses used for Agricultural purposes ¹⁰	No. 945,334	No. 1,054,140	No. 887,321	No. 882,163	No. 1,339,764	No. 1,443,269
Unbroken { One year and above	259,661	266,923	98,943	101,502	359,698	369,658
Horses (in- { Under one year	119,409	119,960	51,677	60,667	174,803	181,400
cluding stallions).						
TOTAL	1,324,404	1,441,023	541,341	544,332	1,874,264	1,994,607
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Cows and Heifers in milk or in calf	2,695,391	2,784,389	1,605,220	1,598,986	4,317,957	4,400,816
Other Cattle:—						
Two years and above	1,423,786	1,341,570	1,055,967	1,027,373	2,484,264	2,376,528
One year and under two	1,462,086	1,518,580	1,109,681	1,071,485	2,561,241	2,599,017
Under one year	1,382,681	1,378,557	1,161,757	1,150,654	2,553,138	2,538,474
TOTAL OF CATTLE	6,963,854	7,026,096	4,832,625	4,849,498	11,936,600	11,914,635
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Ewes kept for Breeding	9,613,289	10,110,508	1,411,770	1,515,024	11,057,425	11,670,055
Other Sheep:—						
One year and above	4,035,062	4,915,778	714,368	759,158	5,355,264	5,680,546
Under one year	9,688,061	10,022,356	1,494,586	1,554,647	11,216,517	11,618,894
TOTAL OF SHEEP	23,931,412	25,057,732	3,620,724	3,828,829	27,629,206	28,967,495
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Sows kept for Breeding	295,568	353,749	105,410	130,842	402,571	486,296
Other Pigs	1,938,287	2,303,048	954,950	1,193,115	2,903,300	3,506,253
TOTAL OF PIGS	2,233,855	2,656,797	1,060,360	1,323,957	3,305,771	3,992,549

⁶ Figures for Ireland include Orchards.

⁷ Furnished by the Department of Agriculture and Technical Instruction for Ireland.

⁸ Figures for Scotland relate only to Beans harvested as corn.

⁹ Figures for Scotland include Beans, Mashlum, &c., for Fodder.

¹⁰ Kohl-Rabi was not separately distinguished in Scotland in 1913.

TABLE II.—Total Produce, Acreage, and Yield per Acre of each of the Principal Crops in Great Britain, in 1913 and 1912, with the Average of the Ten Years 1903–1912.

Crop, &c.		Total Produce		Acreage		Yield per Acre		Average of the Ten Years 1903–1912
		1913	1912	1913	1912	1913	1912	
Wheat		Qrs.	Qrs.	Acres	Acres	Bush.	Bush.	Bush.
	England	6,511,859	6,544,234	1,663,453	1,821,981	31.32	28.74	31.42
	Wales	130,319	136,113	88,135	41,383	27.34	26.31	27.00
	Scotland	282,939	299,448	54,779	62,373	41.32	38.41	39.68
Great Britain		6,925,117	6,978,795	1,756,367	1,925,687	31.54	29.00	31.55
Barley ¹		Qrs.	Qrs.	Acres	Acres	Bush.	Bush.	Bush.
	England	5,984,454	5,198,356	1,469,776	1,365,038	32.57	30.47	32.99
	Wales	338,388	344,049	89,075	91,484	30.39	30.09	30.39
	Scotland	920,716	882,436	198,243	191,370	37.16	36.00	35.09
Great Britain		7,243,558	6,424,841	1,757,094	1,648,192	32.98	31.09	33.19
Oats		Qrs.	Qrs.	Acres	Acres	Bush.	Bush.	Bush.
	England	8,531,574	8,292,549	1,772,247	1,805,569	38.51	35.56	41.23
	Wales	847,263	853,141	202,453	206,910	33.48	32.99	34.01
	Scotland	4,501,607	4,596,193	937,614	956,375	38.40	38.44	37.42
Great Britain		13,880,444	13,741,883	2,912,614	3,029,064	38.13	36.29	39.62
Beans ²		Qrs.	Qrs.	Acres	Acres	Bush.	Bush.	Bush.
	England	910,935	925,062	257,491	269,988	28.30	27.41	29.80
	Wales	3,787	3,479	1,081	1,131	27.77	24.83	27.05
	Scotland	27,875	37,039	5,967	8,421	37.37	35.19	35.73
Great Britain		942,597	965,580	264,549	279,540	28.50	27.63	29.99
Peas ³		Qrs.	Qrs.	Acres	Acres	Bush.	Bush.	Bush.
	England	420,512	485,608	127,367	172,441	26.41	22.53	26.70
	Wales	1,224	1,772	418	623	29.42	22.75	22.46
	Scotland	644	2,205	208	613	24.77	28.78	27.82
Great Britain		422,380	489,585	127,993	173,677	26.40	22.55	26.69
Potatoes		Tons	Tons	Acres	Acres	Tons	Tons	Tons
	England	2,754,487	2,115,033	416,697	438,948	6.61	4.84	6.03
	Wales	140,108	128,006	23,338	25,055	5.53	4.85	5.14
	Scotland	970,905	938,593	149,080	149,768	6.51	6.27	6.41
Great Britain		3,865,400	3,179,632	595,115	612,771	6.54	5.10	6.08
Turnips and Swedes		Qrs.	Qrs.	Acres	Acres	Bush.	Bush.	Bush.
	England	11,938,443	12,084,970	992,330	1,015,968	12.03	11.90	13.03
	Wales	857,680	802,791	56,463	56,985	15.19	14.09	15.28
	Scotland	7,335,857	7,390,878	432,136	439,592	16.98	16.81	16.38
Great Britain		20,130,180	20,278,639	1,480,929	1,512,545	13.50	13.41	14.07
Mangold		Qrs.	Qrs.	Acres	Acres	Bush.	Bush.	Bush.
	England	7,434,471	8,572,407	409,150	473,250	18.17	18.11	19.19
	Wales	176,652	214,938	10,306	12,414	17.14	17.31	17.77
	Scotland	36,421	49,373	1,840	2,822	19.79	17.50	17.80
Great Britain		7,647,544	8,836,718	421,396	488,486	18.15	18.09	19.44
Hay from Clover, &c.		Qrs.	Qrs.	Acres	Acres	Bush.	Bush.	Bush.
	England	2,472,138	1,604,885	1,533,005	1,378,385	32.25	26.18	29.45
	Wales	239,910	226,157	167,476	175,924	28.29	25.71	24.94
	Scotland	688,310	644,156	415,114	423,592	33.16	30.41	31.76
Great Britain		3,399,358	2,475,208	2,115,595	1,978,501	32.12	27.04	29.54
Hay from Permanent Grass		Qrs.	Qrs.	Acres	Acres	Bush.	Bush.	Bush.
	England	5,704,898	5,530,564	4,504,078	4,394,906	25.38	25.17	24.08
	Wales	638,318	563,568	585,614	548,038	22.57	20.63	19.81
	Scotland	258,736	248,991	157,112	166,735	32.94	29.87	29.08
Great Britain		6,601,952	6,343,123	5,246,804	5,109,680	27.28	24.84	23.76

¹ Including Bere.

² Excluding a certain area returned as picked or cut green amounting to 9,697 acres in England and Wales in 1913.

³ Excluding a certain area returned as picked or cut green amounting to 36,259 acres in England and Wales in 1913.

⁴ Excluding 5 acres returned as cut green in 1913.

N.B.—Figures for Scotland are liable to revision.

TABLE III.—Preliminary Statement showing the Estimated Total Production of Hops in the Years 1913 and 1912, with the Acreage and Estimated Average Yield per Statute Acre, in each County of England in which Hops were grown.

COUNTIES	Estimated total produce		Acreage returned on 4th June		Estimated average yield per acre	
	1913	1912	1913	1912	1913	1912
	Owt.	Owt.	Acres	Acres	Owt.	Owt.
Kent { East . . .	47,305	71,415	6,103	5,903	7 77	12 42
Mid . . .	73,609	85,718	7,481	7,310	9 88	11 80
Wend . . .	65,480	100,377	8,360	8,077	7 83	12 42
Total, Kent	186,774	260,410	21,944	21,400	8 51	12 17
Hants . . .	7,274	18,473	1,556	1,516	4 67	12 19
Hereford . . .	22,136	29,430	5,439	5,236	4 07	5 62
Surrey . . .	2,959	5,204	557	513	5 31	10 26
Sussex . . .	22,536	34,098	2,889	2 845	7 60	11 99
Worcester . . .	13,500	24,880	3,157	3,186	4 28	7 81
Other Counties ¹ .	460	863	134	138	3 43	6 40
Total . . .	255,041	373,438	35,676	34,829	7 17	10 73

¹ Gloucester, Salop and Stafford.

NOTE—The total production in 1913 is estimated at 255,641 cwts., which is smaller than in any year since 1909, and 118,000 cwts. less than last year. The average yield per acre is 7 17 cwts or 21 per cent below the average of the past ten years and about 33 per cent. less than last year.

TABLE IV.—Quantities and Values of Corn Imported into the United Kingdom in the undernoted Years.

[From the December Accounts relating to Trade and Navigation of the United Kingdom.]

Description	Quantities			Values		
	1911	1912	1913	1911	1912	1913
	Owt.	Owt.	Owt.	£	£	£
Wheat . . .	98,007,787	109,572,539	105,918,002	38,909,816	46,445,283	43,880,900
Wheat meal and flour	10,061,132	10,189,476	11,978,133	5,277,043	5,518,504	6,347,771
Barley . . .	31,545,420	20,126,294	23,439,548	8,266,145	7,871,581	8,077,214
Oats . . .	18,273,087	18,300,400	18,231,163	5,390,970	6,338,451	5,692,689
Peas . . .	2,196,094	2,574,707	1,978,813	1,012,862	1,261,602	1,006,743
Beans . . .	1,029,101	1,256,741	1,540,405	375,333	470,847	568,189
Maize . . .	38,602,340	43,877,838	49,156,958	10,713,183	13,593,216	18,770,342
Oatmeal, groats, and rolled oats . . .	835,985	832,218	868,877	596,405	602,574	607,761
Maize meal . . .	643,810	610,310	491,827	224,415	240,827	182,413
Other kinds of corn and meal ¹ . . .	1,829,263	1,684,284	1,765,178	748,723	802,039	761,562

¹ Excluding Rice Meal.

TABLE V.—Average Prices of British Corn per Imperial Quarter in England and Wales, as ascertained under the Corn Returns Act, 1882, in each Week of the Year 1913.

Week ended	Wheat	Barley	Oats	Week ended	Wheat	Barley	Oats
	s. d.	s. d.	s. d.		s. d.	s. d.	s. d.
January 4 . . .	30 5	28 6	19 10	July 5 . . .	33 1	25 2	21 0
January 11 . . .	30 3	28 4	19 2	July 12 . . .	33 4	25 10	19 4
January 18 . . .	30 5	28 6	19 4	July 19 . . .	33 6	24 9	20 5
January 25 . . .	30 11	28 10	19 4	July 26 . . .	33 10	24 1	20 8
February 1 . . .	31 1	28 11	20 2	August 2 . . .	34 1	24 5	20 3
February 8 . . .	31 0	28 10	20 1	August 9 . . .	34 1	24 9	19 0
February 15 . . .	30 9	29 1	20 2	August 16 . . .	34 3	24 7	18 7
February 22 . . .	30 11	28 8	20 7	August 23 . . .	33 7	26 5	18 8
March 1 . . .	31 0	28 6	20 4	August 30 . . .	32 7	29 0	17 10
March 8 . . .	31 3	28 5	20 0	September 6 . . .	31 11	30 11	17 8
March 15 . . .	31 1	27 11	20 2	September 13 . . .	31 9	31 5	18 0
March 22 . . .	31 1	24 6	19 11	September 20 . . .	31 7	30 9	17 11
March 29 . . .	31 3	27 6	19 7	September 27 . . .	31 6	30 1	17 9
April 5 . . .	31 4	27 0	19 2	October 4 . . .	31 3	29 9	17 10
April 12 . . .	31 3	27 8	19 2	October 11 . . .	31 0	29 1	17 10
April 19 . . .	31 6	28 11	18 10	October 18 . . .	30 11	28 8	17 9
April 26 . . .	31 8	24 7	19 3	October 25 . . .	30 7	28 7	18 0
May 3 . . .	32 2	25 11	19 6	November 1 . . .	30 1	28 2	17 9
May 10 . . .	32 6	25 9	19 6	November 8 . . .	30 0	28 1	17 9
May 17 . . .	32 10	25 4	19 9	November 15 . . .	30 1	27 8	17 11
May 24 . . .	32 10	25 3	19 11	November 22 . . .	30 4	27 5	18 1
May 31 . . .	32 7	26 1	20 1	November 29 . . .	30 9	27 0	18 4
June 7 . . .	32 10	26 2	19 8	December 6 . . .	31 2	26 8	18 4
June 14 . . .	32 8	24 7	20 2	December 13 . . .	31 2	26 5	18 6
June 21 . . .	32 8	23 10	19 8	December 20 . . .	31 2	25 11	18 5
June 28 . . .	32 8	24 3	19 1	December 27 . . .	31 0	25 10	18 4
				Average of year.	31 8	27 3	19 1

TABLE VI.—Annual Average Prices per Quarter and Total Quantities of British Corn sold in the Towns in England and Wales making Returns under the Corn Returns Act, 1882, in the Year 1913.

Year	Wheat	Barley	Oats	Wheat	Barley	Oats
	s. d.	s. d.	s. d.	Qrs.	Qrs.	Qrs.
1913	31 8	27 3	19 1	2,511,297	2,948,930	639,298

TABLE VII.—Annual and Septennial Average Prices per Bushel of British Corn in the Year 1913, with the Value of 100l. of Tithe Rent-charge.

Year	Annual average price			Septennial average price			Value of tithe rent-charge of 100l.			
	Wheat	Barley	Oats	Wheat	Barley	Oats	Calculated on annual average		Calculated on septennial average	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	£	s. d.	£	s. d.
1913	3 11½	3 4½	2 4½	4 1	3 3½	2 4½	76	3 6½	75	16 4

TABLE IX.—Average Prices of Wool in each Year from 1893 to 1913 inclusive.

Year	BRITISH			
	Leicester ¹	Half-bred ¹	Southdown ¹	Lincoln ²
	Per lb <i>d.</i> <i>d.</i>	Per lb <i>d.</i> <i>d.</i>	Per lb <i>d.</i> <i>d.</i>	Per lb <i>d.</i>
1893	8½ to 9½	9½ to 10½	10½ " 12	10½
1894	9 " 10	9½ " 10½	9½ " 12	10½
1895	9½ " 10½	9½ " 11	9½ " 11½	12
1896	9½ " 11	9½ " 10½	9½ " 11½	11½
1897	8½ " 10	8½ " 9½	8½ " 10½	9½
1898	8 " 8½	7½ " 8½	8½ " 9½	8½
1899	7 " 8	7 " 8½	7½ " 11	8½
1900	6½ " 7½	6½ " 8½	6 " 12	7½
1901	5½ " 6	5½ " 9½	7½ " 9½	6½
1902	5 " 5½	5½ " 6½	7½ " 9½	6½
1903	6½ " 6½	7½ " 8	8½ " 11½	7½
1904	8½ " 9½	9½ " 10½	9½ " 11½	10½
1905	11½ " 12	11½ " 12½	11½ " 13½	12½
1906	12½ " 13	13½ " 14½	14½ " 15½	14½
1907	12½ " 12½	12½ " 13½	13½ " 15	12½
1908	8½ " 8½	8½ " 10	11½ " 12½	8½
1909	8½ " 8½	10 " 11½	12½ " 13½	8½
1910	9½ " 9½	11½ " 12½	14 " 15	9½
1911	9½ " 10½	11½ " 12½	13½ " 14½	9½
1912	9½ " 10½	11½ " 12	13½ " 14½	10½
1913	11½ " 12½	13½ " 13½	14½ " 15½	12½

¹ Computed from the prices given in *The Economist* newspaper.² Extracted from "The Yorkshire Daily Observer Wool Tables."

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in Great Britain, and 239,025 quarters, or 2·8 per cent. in England. The yield per acre in every case except Scotland fell below the average.

The Bean crop of England last year was 1·4 per cent. below that of the previous year; Wales and Scotland showed a yield per acre above, but England was 5 per cent. below the average.

Peas also showed a decrease amounting to 13 per cent. in England. Only 623 acres are under this crop in Scotland and Wales out of a total of 127,993 acres in Great Britain.

Potatoes last year gave the very considerable increase of 30 per cent. in England and 21 per cent. in Great Britain. The yield per acre was also considerably above the average.

Turnips, however, showed a decrease of 1 per cent. in England and the yield per acre, except in Scotland, was some way below the average of the last ten years.

Mangolds also showed a decrease amounting to 2 per cent. in Great Britain. This decrease being due to the less acreage, as the yield per acre was above that of 1912.

Hay from Clover showed the substantial increase of 36 per cent. in England and 23 per cent. in Great Britain. The yield per acre in Great Britain being 9 per cent. above the average.

Hay from Permanent Grasses also showed an increase of 3 per cent. in England and 4 per cent. in Great Britain. The yield per acre being above the average for England, Scotland and Wales.

Hops showed a decrease of 31 per cent., and every district was considerably below the average yield per acre.

EXPORTS AND IMPORTS.

Last year the Imports of Wheat into the United Kingdom were less by 3 per cent. in quantity than those of the previous year. In value the decrease was 5 per cent. There was a drop in the imports of wheat from Russia, Argentina, India, and Australia, whilst those from the United States showed the very large increase of 70 per cent. There was a 17 per cent. increase in imported Flour.

With Barley there was an increase of 11 per cent. in quantity and a little over 2 per cent. in value.

In Oats we find a slight decrease in quantity but one of 10 per cent. in value.

Peas imported last year show a decrease of 2 per cent. in quantity whilst in value they decreased by 22 per cent.

Beans on the other hand advanced 22 per cent. in quantity, and 20 per cent. in value.

The imports of Maize again show a large increase amounting to 12 per cent. in quantity and in value 1 per cent. The supply of maize did not, however, reach the amount imported in 1907 (53,379,950 cwt.).

"Other kinds of Corn and Meal" were imported in greater quantities than in the previous year, the increase being 6 per cent., whilst in value there was a decrease of 5 per cent.

THE WEATHER OF THE PAST AGRICULTURAL YEAR.

THE wet summer of 1912 was succeeded by a fair dry autumn which proved of inestimable value to the farmer, and rendered the outlook for the coming year more than ordinarily favourable. The following winter months were, however, characterised by an unusual prevalence of wet stormy weather, which continued, with unimportant breaks, throughout the greater part of the spring. The land became in time thoroughly soddened, and, in addition to the damage which resulted to the autumn sown crops, the work of spring sowing was delayed to quite a serious extent. Nothing, in fact, appeared to be thriving well but the pastures, which made luxuriant growth, and as the

late spring and early summer were fairly fine, an abundant hay harvest was secured in nearly all districts. The succeeding months were exceptionally dry, and favourable for all but the root crops which, towards the end of the season, presented a stunted and sickly appearance. At the time of the cereal harvest the weather was, upon the whole, very favourable, and in spite of the untoward influences of the winter and spring seasons the crops proved, upon the whole, about equal to the average, the only material deficiency being in the yield of oats. Good falls of rain in September helped to save the roots and proved also of great value to the grass lands, the promise of keep for the winter months being in the end exceptionally good. The weather contrasts presented by the various seasons of 1913 were indeed striking, and a long search through the meteorological annals would scarcely reveal another year in which the winter and spring months were at once so stormy and wet, the summer so exceptionally dry, and the autumn so unusually mild.

THE WINTER OF 1912-13.

The winter of 1912-13, which was, upon the whole, an unusually open one, was marked at the outset by a frost which attained considerable severity in all the more northern districts. Cold weather set in towards the close of November, and between the 30th of that month and the 2nd of December the sheltered thermometer fell below 10° in many parts of North Britain, the lowest readings reported being 1° at West Linton (Peeblesshire), 2° at Balmoral, and 3° at Scaleby, near Carlisle, and Allan's Green, in Northumberland. On the surface of the ground the thermometer touched zero in several places, and at Worksop it fell 4° below that point. Over our southern counties the cold was far less severe, few places reporting a shade temperature much below 25°. Snow fell at about the same time in many parts of the country, heavily in the north, where the depth amounted in some places to between six and seven inches. A more severe snowstorm was experienced over the northern and central districts on January 9 and 10, and was accompanied by a heavy gale from the South-Eastward. At Rauceby, in Lincolnshire, the snow lay on this occasion in level places to a depth of fourteen inches, at Morpeth to eighteen inches, and in some parts of Scotland to a depth of more than twenty inches. In addition to that already mentioned the only winter frosts worthy of note were those of January 13-14, February 14 and February 23. In the first instance the sheltered thermometer fell to 8° at Mayfield, in Staffordshire, and to 10° at Newton Rigg, in Cumberland; on February 14 it reached 19° at Llangammarch Wells; and on February 23 it

sank to 14° at Mayfield, Staffs. At nearly all other times the winter was mild and stormy, and in December and January it was also very wet. The rainfall was as a rule distinguished rather by undue frequency than by excessive weight, but between December 11 and 14 a very heavy fall was experienced in Cumberland and North Wales, the aggregate amount for the four days being as large as 9·7 in. at Pen-y-Gwryd, at the foot of Snowdon, 8·8 in. at Seathwaite, in Cumberland, and 5·5 in. at Bettws-y-Coed. Some of the worst weather of the winter occurred at about Christmas time. On Christmas Eve the western and northern parts of the United Kingdom were visited by a heavy gale from the South-Westward, and on Boxing Day a storm of still greater severity occurred in the southern and south-western districts, heavy rains being experienced at the same time in nearly all parts of the country. During the gale of December 26 the wind blew, in gusts, with a velocity of 88 miles per hour in the Scilly Islands, and 98 miles per hour at Pendennis Castle, on the shores of Falmouth harbour. Towards the middle of February the weather became quieter and much drier, and over England and Wales as a whole the total rainfall of the month amounted to little more than half the average. Between the 10th and the 25th there were in fact many places in which no rain fell for a fortnight, and at Llandudno and Beaconsfield the drought lasted for sixteen days. For the winter as a whole the mean temperature was well above the average, the excess of warmth being greatest in the east and south-east of England. Rainfall exceeded the normal by as much as 27 per cent. in the midland counties, and 32 per cent. in the south-western districts; in the north-east of England the excess was not more than 7 per cent. Bright sunshine was generally deficient, but in the south-eastern counties the total duration agreed very closely with the average.

THE SPRING OF 1913.

The fair, quiet weather experienced during the latter half of February proved of comparatively short duration, the succeeding spring months being mostly changeable and very wet. March winds were as boisterous as usual, but in place of the cold, dry Easterly breezes which bring with them the proverbial "peck of dust" the gales were more often from the Southward or South-Westward, the principal storms occurring between the 4th and 6th, the 15th to 18th and the 22nd to 23rd. About the middle of the month the gales were accompanied by hail and snow showers (in some parts of Lincolnshire as much as four inches of snow fell on the 17th), and on the 15th thunderstorms were experienced in many scattered places. The South-Westerly gale which occurred on the night of the

22nd was especially severe in the south of England, and resulted in the destruction of Worthing pier. The mean temperature of March was above the average, but there was an almost entire absence of genial spring days, very few places experiencing at any time a shade reading as high as 60°. The only frost of any consequence occurred early on the 18th, when the sheltered thermometer fell to 20° at Fulbeck, to 19° at Bellingham, and to about 15° in some parts of central Scotland. In April the weather was almost as rough as in March, stormy periods occurring about the 11th, between the 15th and 20th, and between the 26th and 29th. The gales of the 11th were from the Southward, but the wind was unusually cold, and was accompanied in many districts by considerable falls of snow. On the 11th and 12th the thermometer over the northern and central parts of Great Britain rose very little above the freezing point, and on the night of the 12th it fell many degrees below it, a shade minimum of 19° being recorded as far south as Wokingham. In the closing week there was, for the first time in the season, a welcome touch of spring warmth, the thermometer at inland stations in the south-east of England touching 70°. The weather was, however, still very unsettled, and on the evening of the 29th thunderstorms of considerable severity were experienced over a large portion of the country. In May the weather was of a proverbially changeable character, but in the south and east of England it was much drier than in March or April. Throughout the greater part of the month the thermometer was low, and at the close of the first week sharp ground frosts were experienced in most places. Thunderstorms occurred in the southern counties on the 2nd, and heavy falls of rain in many northern districts on the 9th and 10th, but after the latter date the weather improved, and in many places in the south and east of England no rain was experienced for more than a fortnight. In the closing week the weather became thundery and very warm, shade temperatures of 80° and upwards being experienced on several occasions and in many parts of England. In the London district, where the thermometer on the 26th and 27th touched 84°, a shade reading exceeding 80° was recorded on each of the six days, May 25 to 30, a spell of warmth without precedent in the Mays of the previous half century.

For the spring as a whole the mean temperature was, if anything, slightly above the average. Rainfall was greatly in excess of the normal, both as regards frequency and intensity. At most places situated in the western and southern districts there were at least twelve to fifteen more rainy days than usual, with a total fall amounting to more than half as much again as the average, the wettest region being in the south-west, where

the excess was no less than 69 per cent. In the east of England the excess was small, only 17 per cent. Bright sunshine was everywhere deficient, especially in the south-western district, where the loss throughout the season amounted on a mean to more than an hour per day.

THE SUMMER OF 1913.

The summer of 1913 was, for the most part, not only cool and cloudy but remarkably dry—a most unusual combination of meteorological events at such a season of the year. The absence of rain was perhaps all the more noticeable seeing that the very dry season was immediately preceded by one of the wettest summers on record. Over England and Wales as a whole the total summer rainfall in the one year amounted to nearly four times as much as in the other.

June opened with a period of cool unsettled weather, and on the 5th or 6th heavy rains were experienced in the hilly portions of the western and northern districts. An unusually severe summer gale occurred on the 9th and 10th, with exceedingly heavy falls of rain in Cumberland and North Wales, but after this the weather improved, and for nearly three weeks a large portion of the country experienced a drought of considerable severity. Temperature was at first rather low, but subsequently rose to a high summer level, the warmest weather occurring on the 16th or 17th, when the thermometer exceeded 80° in many districts, and reached 87° at Greenwich and Wimbledon, and 88° at Wantage. On the latter day severe thunderstorms were experienced in Cambridgeshire and Huntingdonshire, the accompanying rainfall amounting to more than an inch and a half in many places. At Great Paxton, near St. Neots, nearly three inches fell in the space of an hour and a quarter. After a short spell of cooler weather the thermometer again rose, and on the 29th it exceeded 80° in several parts of our southern counties. July was mostly cool, cloudy and dry, but severe thunderstorms which occurred on the 6th, the 10th, and between the 14th and 15th deposited heavy falls of rain locally, many places recording in a few hours as much as an inch to an inch and a half. On the night of the 14th to 15th, during a very severe thunderstorm, nearly three inches was collected at Mayfield, in Sussex. The absence of summer warmth was rather remarkable, very few places experiencing during the month a shade temperature appreciably above 75°. Between the 27th and 29th, however, the thermometer in some central and southern districts managed to reach 80°, and at Killerton, near Exeter, it touched 83°. At a large number of places situated in the western half of the United Kingdom, the drought which had commenced about

July 10 continued unbroken until August 8 or 9, and in some scattered places for very much longer. At Exmouth there was no rain for twenty-nine days, and at Teignmouth for thirty days, while at South Hanningfield, Essex (a district in which the drought appears to have been very local), there was none between July 20 and August 22, a period of thirty-four days. Towards the end of August the weather gradually broke up, and between the 29th and 31st sharp thunderstorms and heavy rains occurred in many parts of the country. The most general fall was reported on the coasts of Kent and Sussex, where the rains of the 30th and 31st amounted to between 1.5 in. and 2.5 in., and sufficed (in spite of the previous dry weather) to swell the monthly total to an amount considerably in excess of the average. August produced very few warm days, but temperatures slightly above 80° were observed locally between the 2nd and 4th and the 28th and 30th, a reading as high as 84° being recorded at Worksop on the 4th, and at Matfield, near Tonbridge, on the 28th.

The mean temperature of the summer was below the average, the deficiency being greatest in the eastern and south-eastern counties. The rainfall of the season was exceptionally small. In the wettest district (the north-western) the total amount was little more than two-thirds, and over the country generally it was considerably less than half the average, and was much smaller than in any summer of the previous twenty years. The driest weather of all occurred in the south-west, where the total rainfall amounted to only 39 per cent. of the average. At Exmouth very little more than an inch fell in the period of 103 days, running from May 15 to August 25. The total duration of bright sunshine during the summer was everywhere small; in the midland and north-eastern counties the mean daily allowance for the entire season was more than three-quarters of an hour below the average.

THE AUTUMN OF 1913.

An unusually cool summer was followed by one of the mildest autumns the country had experienced for many years, and at the close of November the appearance of vegetation in many parts of England showed no indication whatever of the early approach of winter. The mildness was due not so much to the presence of any very high temperatures as to the absence of low ones, and more especially to the warmth of the nights. Over a large portion in fact of central and southern England the season passed without any frost worthy of note, even upon the surface of the ground, an occurrence without precedent in autumnal records extending back for more than thirty years.

**Rainfall, Temperature, and Bright Sunshine experienced over
England and Wales during the whole of 1913, with Average
and Extreme Values for Previous Years.**

RAINFALL								
Districts	TOTAL FALL				NO OF DAYS WITH RAIN			
	For 47 years, 1866-1912				For 32 years, 1881-1912			
	In 1913	Average	Extremes		In 1913	Average	Extremes	
			Driest	Wettest			Driest	Wettest
North-eastern .	In 220	In 255	In 199 (1884 and 1905)	In 372 (1872)	160	186	163 (1884)	208 (1894)
Eastern . .	211	249	191 (1874 and 1887)	331 (1872)	176	181	156 (1898)	205 (1894)
Midland .	264	275	192 (1887)	398 (1872)	178	179	148 (1887)	210 (1882)
South-eastern .	271	289	215 (1887)	417 (1872)	169	174	137 (1899)	197 (1882 and 1903)
North-western with North Wales }	345	377	249 (1887)	592 (1872)	203	200	163 (1887)	226 (1903)
South-western with South Wales }	396	417	283 (1887)	686 (1872)	204	200	159 (1887)	235 (1882)
Channel Islands ¹	321	321	262 (1887)	418 (1910)	203	210	169 (1899)	251 (1886)

MEAN TEMPERATURE					HOURS OF BRIGHT SUNSHINE			
Districts	For 47 years, 1866-1912				For 32 years, 1881-1912			
	In 1913	Average	Extremes		In 1913	Average	Extremes	
			Coldest	Warmest			Cloudiest	Sunniest
North-eastern	48.3	47.6	44.8 (1879)	49.0 (1898)	1276	1335	1006 (1885)	1801 (1906)
Eastern . .	49.8	48.7	45.6 (1879)	51.0 (1868)	1430	1585	1267 (1888)	1884 (1899)
Midland .	49.0	48.5	45.6 (1879)	51.1 (1868)	1193	1404	1156 (1912)	1715 (1893)
South-eastern	50.7	49.8	46.7 (1879)	51.4 (1898)	1470	1619	1245 (1888)	1983 (1899)
North-western with North Wales }	49.2	48.6	45.7 (1879)	50.3 (1868)	1317	1402	1198 (1888)	1683 (1901)
South-western with South Wales }	50.4	50.0	48.1 (1888)	52.8 (1868)	1417	1639	1294 (1912)	1964 (1893)
Channel Islands ¹	52.6	52.2	50.7 (1885)	54.3 (1899)	1636	1890	1647 (1912)	2300 (1893)

NOTE—The above Table is compiled from information given in the Weekly Weather Report of the Meteorological Office

¹ For the Channel Islands the "Averages" and "Extremes" of Rainfall and Mean Temperature are for the thirty-two years, 1881-1912.

The Rainfall of 1913 and of the previous Ten Years, with the Average Annual Fall for a long period, as observed at thirty-eight stations situated in various parts of the United Kingdom.

Stations	1913		Rainfall of Previous Years										Average rain- fall
	Total rain- fall	Dif- ference from ave- rage	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	
			In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	
ENGLAND AND WALES:													
Durham	234	-14	292	230	249	248	194	248	238	192	190	308	272
York	205	-19	310	251	246	248	218	256	228	207	208	303	253
Norwich	244	-11	350	267	318	278	252	263	285	230	215	294	273
Yarmouth	226	-11	338	204	285	242	225	219	280	226	210	251	253
Cambridge	187	-18	273	190	228	231	176	312	224	190	178	305	227
Rothamsted	220	-21	338	276	297	268	234	253	268	248	232	333	279
Nottingham	223	-5	301	194	247	252	213	235	218	189	200	322	248
Cheadle	312	+5	389	298	365	377	333	319	343	267	263	392	328
Hereford	398	+10	329	254	364	240	339	297	386	240	250	378	270
Gloucester	305	+1	392	243	332	321	245	289	362	251	288	411	307
Oxford	252	+1	525	309	289	275	239	269	240	210	227	359	250
London (Kew)	249	+9	280	231	255	237	222	238	236	226	212	382	240
Hastings	307	+5	320	296	289	314	220	233	287	369	246	323	291
Southampton	320	+4	373	304	336	361	278	308	331	282	310	432	309
Stonyhurst	421	+10	341	442	533	488	483	500	497	388	396	589	468
Manchester (City)	298	-14	408	311	375	370	325	339	370	298	285	387	347
Liverpool	259	+10	302	258	286	284	239	268	281	240	251	344	288
Llandudno	318	+3	330	305	367	320	308	263	316	261	260	385	308
Pembroke	415	+18	410	386	389	331	385	372	425	282	318	458	351
Orlton	310	-10	447	290	434	368	266	343	301	250	309	438	346
Oullompton	374	+5	478	350	468	344	275	334	339	281	349	437	357
Plymouth	365	+2	470	376	443	352	310	363	334	305	414	468	359
Scilly (St. Mary's)	348	+4	365	342	366	370	247	293	298	275	344	399	336
Jersey (St. Aubin's)	266	-23	433	317	444	317	252	286	292	303	373	382	342
¹ Mean for the whole of England and Wales	290	-6	368	288	345	313	266	299	299	256	280	376	310
SCOTLAND:													
Stornoway	470	-3	547	483	530	462	536	438	432	507	557	621	446
Wick	246	-8	326	274	325	336	320	296	332	325	253	359	293
Aberdeen	238	-22	293	276	277	304	250	287	315	235	237	393	307
Balmoral	312	-13	383	289	375	308	262	318	391	356	249	441	380
Leith	179	-26	253	199	258	271	221	307	302	192	234	309	238
Marchmont	281	-24	319	317	289	342	307	333	399	274	261	386	344
Fort Augustus	455	+2	503	448	432	374	439	420	518	436	414	660	446
Glasgow	362	-6	410	363	392	393	358	428	401	307	337	533	387
¹ Mean for the whole of Scotland	404	-3	454	417	432	418	431	445	483	414	421	571	418
IRELAND:													
Bellast	377	+12	447	363	408	357	387	331	362	318	318	423	336
Markree Castle	457	+9	491	423	555	407	473	452	446	390	449	541	420
Armagh	351	+10	358	276	325	289	331	316	301	398	308	363	319
Dublin	288	+3	377	235	354	269	238	270	238	283	232	315	260
Birr Castle (Parsons-town)	354	+7	345	310	342	296	334	339	326	257	329	408	330
Kilkenny	351	+5	364	363	374	301	335	324	287	260	315	420	332
¹ Mean for the whole of Ireland	419	+6	410	365	410	353	392	397	367	346	389	478	395

¹ The Average Fall is in nearly all cases deduced from observations extending over the thirty-five years 1871-1905.

² The Mean Rainfall for each country is based upon observations made at a large number of stations in addition to those given above.

³ The figures for the years prior to 1906 are for Braemar, which ceased reporting after 1905.

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Over the southern half of England the opening week of September was marked by exceedingly heavy falls of rain, and on the 4th and 5th severe thunderstorms occurred in Cornwall and Devonshire, especially around Dartmoor. At Princetown, during a thunderstorm on the early morning of the 4th, eight bullocks were killed by lightning in one spot, and nearly an inch and three-quarters of rain fell in the space of an hour. The occurrence of heavy local downpours was, in fact, a prominent feature in the weather of the early autumn. On September 12 and 13 exceedingly heavy rain occurred in Wales (as much as 4 in. at Haverfordwest in the two days), and on the 16th and 17th the north of England and the north midlands were similarly affected. At Newcastle-on-Tyne nearly two-and-three-quarter inches of rain fell on the 16th in an hour and a half, and on the following day a phenomenally heavy downpour occurred in and around Doncaster. At four rainfall stations in the neighbourhood the amount ranged between five and six inches, and was, in common with that which visited the Norwich district on August 25—26, 1912, one of the largest ever recorded in the less hilly portions of the United Kingdom. The warmest September weather occurred in the closing week, mostly about the 27th, when the thermometer in the shade rose above 75° in many places and touched 82° at Whitby. The nights were at the same time unusually mild; at Manchester on the night of the 26th the thermometer did not fall below 65°. In October there was practically no cold weather at all and scarcely any night frosts, the few recorded being too slight to exercise any serious effect upon vegetation. Thunderstorms and heavy local falls of rain were again frequent, the principal downpours occurring between the 5th and 7th, when most parts of England were in turn affected; on the 14th, in the mountainous districts of Cumberland and North Wales, and on the 26th in the south-eastern quarter of England. On the evening of the 27th a violent tornado swept along the Taff Valley, Glamorganshire, wrecking many buildings and causing some loss of life. Connected, in all probability, with the same disturbance, a furious whirlwind occurred a little later in the Church Stretton district, where a considerable amount of damage to trees and farm buildings was reported. November was marked by a continuance of unusual warmth, and was in most places the mildest experienced since the year 1881. The only frosts of any consequence were restricted to small areas and occurred between the 6th and 9th and on the 23rd; on the latter occasion the sheltered thermometer fell to 21° at Wokingham, and to 22° at Raunds, near Northampton. Heavy rains were not nearly as frequent as in September or October, but considerable falls occurred around Snowdon on

the 12th, 17th, and 19th, and in Wales and the south-west of England on the 20th.

For the autumn as a whole the mean temperature was considerably above the average. In the western and northern parts of the country the season was less mild than in 1908 or 1898, but in the east and south-east of England it was the mildest for at least forty years past. The autumn rainfall was below the average in the northern parts of the country, but above it in all the central and southern districts, the greatest excess, 19 per cent., being in the south-eastern counties. The duration of bright sunshine differed but little from the normal; in most districts it was slightly in excess.

FREDK. J. BRODIE.

12 Patten Road,
Wandsworth Common, S W

NOTES, COMMUNICATIONS, AND REVIEWS.

The Government Scheme for the Improvement of Livestock.—At the Farmers' Club Dinner in December, 1912, Mr. Runciman, President of the Board of Agriculture, announced that the Development Commissioners had strongly recommended to the Treasury the release of moneys from the Development Fund for the purpose of the improvement of livestock and for the financial assistance to milk-recording societies. A Parliamentary White Paper, containing a scheme with this object, was issued in August, 1913 :—

“The main object of the scheme is to afford a means of demonstrating to groups of farmers, especially the smaller farmers, that it is sound economy and of pecuniary advantage to use only sound and high-class sires, and to keep records of the milk yield of their dairy cows with a view to getting rid of poor milkers and improving by judicious selection and breeding the productiveness of their herds. Preference in the assistance contemplated is to be given, as far as possible, to occupiers of agricultural holdings which either do not exceed 100 acres in extent, or if exceeding 100 acres are of an annual value for purposes of income-tax not exceeding 100*l*.”

Financial help is to be given under this scheme for the provision of high-class bulls, boars, and stallions, to milk-recording societies, and to selected agricultural institutions for the employment of livestock officers. The total amount of financial assistance that the Board is allowed to give is as follows :—

	£
(1) Grants to societies or individuals for the provision of bulls	13,500
(2) Grants to societies for the provision of boars	1,000
(3) Grants to heavy horse societies	8,900
(4) Grants to milk-recording societies	5,000
(5) Grants to the selected agricultural institutions for the employment of livestock officers	8,400
	<u>£37,000</u>

The Board has divided England into ten provinces. They have allocated to these provinces and also to Wales and Monmouth grants in accordance with the estimated proportion of holdings above 20 acres and under 100 acres. The ten provinces are estimated to contain 81 per cent. of such holdings, and Wales and Monmouth 19 per cent. The amount of the grant for England has been apportioned between the districts in accordance with the distribution of animals.

For the provision of bulls, annual grants of not more than 15*l.* per animal are to be given to clubs and societies, or 12*l.* to an individual owner. The latter will only receive grants when the livestock officer is satisfied that it is not possible to form a bull club, and further, no individual will receive a grant unless the livestock officer is satisfied that in return for the grant the bull will be available for a greater number of cows belonging to the smaller farmers than it was previously. Not more than four annual grants are to be made to any one individual, and not more than five to any society, for each approved bull provided by it. Not more than one-third of the sum available for grants in any one year is to be spent in grants to individuals. After the year 1918-19 assistance by way of loans repayable without interest will be available if the financial position of the Development Fund warrants it.

Grants in aid of the provision of boars will be made to societies only; 4*l.* for each approved animal for the first year and 2*l.* for the second.

Grants are to be made to heavy horse stallion societies provided the societies do not hire stallions to travel at a fee exceeding 3*l.* 3*s.* No grant will exceed 80*l.* per approved stallion, of which not more than 40*l.* will be a direct grant, the remainder being utilised, if necessary, for "assisted nominations." No reduction is to be made in service fee except in "assisted nominations." The stallions for which grants are to be given will be approved by competent experts and registered under the Board's scheme. As to the grants to be given to milk-recording societies, preference is to be shown to societies already in existence and formed on a co-operative basis. Each society shall employ a "tester" to check and take records, the appointment of such tester to be

approved by the Livestock Committee of the Advisory Council. (See below.) The ten selected agricultural institutions of England and the two of Wales and Monmouth are to receive grants for the salaries and expenses of a livestock officer, whose duties will be to promote and carry out the scheme in the area to which he is appointed.

To administer this scheme each province will have an Advisory Council to be comprised of nominees (1) of the selected Agricultural Institution, (2) of the Education Committee, (3) of the Board. The Advisory Committee will appoint a Livestock Committee, whose duties will be to make recommendations to the Board in respect of the allocation of the various grants amongst the counties comprised in the province, to advise the Board on the conditions to be attached to the grants to be given towards the cost of hiring and purchasing animals, and generally to advise the Board when required in connection with the improvement of livestock. They may appoint such sub-committees as they think fit.

The administrative body will be a County Livestock Committee constituted of two members of either the County Agricultural Education Committee or sub-committee of the County Council, nominated by the County Council, not less than two practical stock breeders appointed by the above members, and at least one member of any recognised county breed society. The County Livestock Committee may appoint such sub-committees as they may think fit.

The Livestock Committee will decide, after being acquainted by the Board of the amount of grant at their disposal in the province, the amount to be allocated to each county. The County Livestock Committee will prepare a scheme for dealing with the grant and will submit it to the Board through the Livestock Committee. The animals will be selected by a selection committee appointed by the County Livestock Committee. Applications for grants are to be made through the livestock officer who will be a member of each selection committee.

Attached to the White Paper is a schedule showing the allocation of grants for the improvement of livestock. The Paper can be obtained from Messrs. Wyman & Sons, price 1d.

W. R. P.

The Sugar Industry in France.—In view of the interest which has been aroused in the cultivation of sugar-beet in this country, it may be timely to draw attention to the very marked reduction in the area devoted to this crop in France. In the *Bulletin de la Société des Agriculteurs de France* for July 1 last, M. Émile Pluchet discusses the causes in an article entitled

"The Crisis in the Sugar industry and the Cultivation of Sugar-beet." He states that since the Brussels Convention in 1902, 35 per cent. of the factories have disappeared, the area under beet has been reduced by 26 per cent., and the amount of sugar produced (even in an exceptionally rich year) has declined by 16 per cent. The figures are the more surprising seeing that there is a further reduction of 9 per cent. in the area sown in 1913. The contributory causes are stated as follows:—

(1) The abolition of bounties, which has caused a loss of about 7 francs per ton of roots to the manufacturer.

(2) The increase in the cost of manufacture, coal, coke, lime, &c., all having gone up in price to an extent which adds 3·50 francs per ton to the cost.

(3) The new methods of raising and handling the crop, machines and implements replacing hand labour, and causing the roots to be delivered with a much larger quantity of adherent earth. No account of this is taken in the weighing, with the result that the loss to the manufacturer is put at 2 francs per ton.

Altogether, then, it appears that the manufacturer has suffered an additional burden of 12·50 francs per ton. Against this there is a certain set-off in the reduction of the price paid to the grower for density exceeding seven degrees, which makes the roots cheaper by 4 francs per ton than they were ten years ago, and leaves the manufacturer to face a net additional burden of 8·50 francs per ton. So far it appears to be the manufacturer who has suffered most, which must be an unusual state of affairs and one which cannot long continue, and the writer of the article points out that the burden will most certainly be transferred to the grower. In view of the magnitude of the industry in so many departments of Northern France, he urges the necessity for joint action between grower and manufacturer to secure the aid of Parliament in the prevention of a serious disaster. The measures proposed are not stated in the article, but the writer remarks that no return to the bounty system is desired, for sooner or later it would be bound to operate against the industry.

C. S. O.

"A Pilgrimage of British Farming."—By A. D. Hall.—Those who had the privilege of reading the story of this pilgrimage in the columns of the *Times* will feel grateful for the opportunity of possessing it in permanent form. It does not always happen that a work which primarily appears at intervals gains in interest and value when thrown together. But this is a case where it does in an exceptional degree. What were articles in the *Times* become in this book chapters bound

by a far closer connection than exists between the parts of most books that are written as such, and this merit of Mr. Hall's book is associated with its other merits. The author had a very definite object in view when he set out on his pilgrimage, and although it took a considerable part of three years to carry out that object, it was not changed in the slightest, nor was the enthusiasm with which it was pursued diminished. "Men mostly learn by example," says Mr. Hall, "by looking over the hedge." Well, this book contains an account of what was seen during one of the longest and most thoughtful looks over the hedge that has ever been taken in the history of British agriculture. The eyes which looked were all the time those of the practical farmer. Other objects would undoubtedly invite their inspection, but they are not introduced here, and there is not a sentence that has not a bearing on practical problems in farming. Within this wisely restricted range of what is immediately interesting to farmers there is a remarkable clearness and accuracy of observation and what is seen clearly and fully is reproduced as clearly and fully in simple and appropriate language that brings the picture within the reach of the plainest man who knows and cares anything about agriculture.

For everyone, no matter how wide his knowledge of the country may be, this book will change a vague and general impression about farming methods pursued in many parts into knowledge clear and definite enough to be of interest and assistance. During the three years 1910, 1911, 1912, almost every important district in the kingdom was surveyed, from Cornwall in the south to the fertile and well farmed portion of East Rosshire in the north. Not even Ireland is missed. There is no attempt to give exhaustive local information. No single man could acquire and impart such information, and no single book could contain it, but the principles, according to which appreciation of good farming is here expressed and criticism of inferior farming offered, are everywhere applicable. Criticism ranges from the sympathetic chiding of men whose "farming is unprogressive and unenlightened" to the frank and repeated condemnation of the "bad farming which pays by cutting down expenditure to a minimum and making a profit of all that can be skimmed off the land." With the discriminating appreciation and criticism which it contains the further this book goes the more it will stimulate landlords, farmers and even labourers to higher achievement.

With reference to the relations of these three classes interested in agriculture Mr. Hall has some remarks to offer. From what he saw of the Land Court in Ireland he is not prepossessed in its favour. Taking the test of the part they

played in bringing British agriculture through the depression, and of the work done by such men as Townshend and Coke, he believes landowners might yet prove capable of meeting the new demands of the time. In particular he would have them exercise some authority in bringing up the standard of farming from the low level to which it has fallen under many tenants. He sees no necessary evil in the emigration of labourers from the villages, one highly paid man with machinery being better than several low paid and inefficient. But in economics as in other sciences there have been rapid developments, and men seem afraid to express their views, lest, in Mr. Hall's own words on another subject, "they may at any time require remodelling until they are hardly recognisable." The remarks twice repeated on the necessity and advantage of a good general education for farmers are very fine. The common-sense and enthusiasm which mark the treatment of every practical problem have once more a fitting expression in this final appeal for an open and susceptible mental attitude on the part of farmers.

J. O.

"Farm Management."—By G. F. Warren.—Mr. Warren is Professor of Farm Management in the New York State College of Agriculture, Cornell University. The subjects of which he treats would be classed under agricultural economics in this country. "Farm management," he says, "is the study of the business principles in farming. It may be defined as the science of the organisation and management of a farm enterprise for the purpose of securing the greatest continuous profit. . . . The best way to find out what methods of farm organisation and management are most successful is to study the methods now used and the profits secured on large numbers of farms, and determine how the more successful ones differ from the less successful, and find to which of the differences the success is due."

In the United States, investigations into these matters have been carried on for a number of years, and there is now a large body of evidence from which to draw conclusions, evidence collected from inquiry among farmers, from cost accounts, census data, travel and study in different parts of the United States and experience in farming. Some results of this activity are set forth here. It has been found that "most farmers have a hobby that is overdone while other things are neglected. It requires good judgment to keep the farm development properly balanced. . . . A careful farmer may hope for crop yields a fifth better than the average, and production per animal a half better than the average." Some people are inclined to argue that success altogether depends on the man,

but the reply is that by studying many farms it is possible to learn by what methods success is attained. "Merely being an unusual man does not amount to anything, unless one does something definite. Successful farms differ from unsuccessful ones by perfectly tangible things."

The chapter on "Farm Records and Accounts" is valuable and interesting. A clear, though rather arbitrary, distinction is drawn between mere book-keeping and cost accounting, the system of accounts which the author recommends. This system he regards as an investigation into the internal organisation and management of the farm, the object of which is to enable the farmer to organise his business more efficiently. Records or accounts kept on this principle makes it possible to see what style of farming pays best, and by what changes the farmer can tighten up his management in order to get the greatest profits. So great is the value of this system that it is now regarded as much more important than the mere book-keeping which involves only a record of sales and purchases. British agriculturists have hitherto paid little or no attention to this system, but the Institute for Research in Agricultural Economics, at Oxford University, has now taken it up, and with the co-operation of many farmers in England and Scotland has succeeded in establishing it pretty widely. By this means much useful information is being obtained which will prove of immense advantage to the farming community.

J. O.

"An Agricultural Faggot."—By R. H. Rew.—One of the rarest gifts which nature bestows is that faculty of clear-sightedness which enables its possessor to view passing events in their proper perspective, to assign to them their true causes, and to understand and appreciate their meaning. It is a faculty much to be desired, though not always found, in the student of agricultural economics, and it is this faculty which has made the occasional articles and papers by Mr. Rew of so much value and interest to those for whom they have been intended. Those reprinted under the modest title of *An Agricultural Faggot* have appeared at intervals during the past twenty-five years, and although their author suggests that some of them may have a flavour of antiquity, the fact is that the historical subjects are of perennial interest, whilst the chapters dealing with social and economic questions relate to matters which are still being debated and which are still unsettled. The chapters are ten in number, the first of them being a reprint of the paper dealing with agricultural history which aroused so much interest at the Farmers' Club so recently as May last. Others relate to

co-operation amongst farmers to secure political, social, and commercial advantages; the middle-man in agriculture (Mr. Rew grants that he is often indispensable, and not always the parasite that over-enthusiastic co-operators assume him to be); the migration of the agricultural labourer a (dispassionate analysis of the position of the rural worker in the year 1892, which is of particular interest in that many changes which were being advocated at that date, such as Parish Councils, Old Age Pensions, &c., have since been effected); whilst to many people the paper read last year to the members of the British Association on the nation's food-supply will be of chief interest as being the most authoritative attempt to set out the relative values of imported and home-produced food.

These and other papers read at various times before limited audiences are now available to "all those who love the land," and their collection and publication at the moment when so much amateur effort is being brought to bear upon land questions of every kind is particularly opportune.

C. S. O.

SIR RICHARD POWELL COOPER, BART.

SIR RICHARD COOPER, who died after a short illness on 30th July last, was born on 21st September, 1847. He was the only child of Mr. Henry Cooper, of Clunbury, Aston-on-Ullun. He first intended to follow the veterinary profession, and he passed out of the Royal College of Veterinary Surgeons with honours. Ultimately, however, he entered the family firm of William Cooper and Nephews, the well-known agricultural chemists of Berkhamsted.

From this time his agricultural interests were rapidly extended, and Sir Richard Cooper soon became very prominent in the development of the foreign market for English pedigree stock. A farmer himself on an enormous scale in England, Australia, South Africa, South America, and Russia, he showed farmers abroad in our colonies and in foreign countries the value of our pure-bred stock of all classes, and it would not be too much to say that no one individual has done so much to create the present world-wide demand. Shorthorns, Red Polls, Shropshire sheep, and several breeds of pigs, all were kept by him either at Shenstone, or at Ashlyns, and the showyard record of his flocks and herds was a remarkable one.

Sir Richard became a Member of the Royal Agricultural Society in the year 1888, and was elected to represent Staffordshire on the Council in 1905. At the time of his death he was a member of the Finance, the Showyard Works, Farm Prizes,

and the Special Committees. A business man of exceptional shrewdness, he had unbounded faith in the policy of a migratory show-yard, and probably most members of the Society are aware that when the question of abandoning the permanent ground at Park Royal was under discussion, he guaranteed to bear any loss which might attend a return to the migratory principle during the first few years. The present strength of the Society's position is sufficient evidence of the soundness of his judgment.

The resumption of the Farm Prize Competitions, which now form so popular a feature in connection with the annual country meeting, was likewise due to his generosity, for he undertook to provide for the whole of the expenses in connection with them until the Society should be in a position to take over the liability.

Sir Richard married, in 1872, Elizabeth Anne, daughter of Mr. Elias Ashmole Ashmall, of Hammerwich, Lichfield, who survives him. He was created a baronet in the year 1905 in recognition of his services to agriculture, and he is succeeded by his son, Richard Ashmole Cooper, M.P. for Walsall. He also leaves another son and three daughters.

C. S. O.

MR. H. HERBERT SMITH.

MR. HENRY HERBERT SMITH, who died on October 19, 1913, was the son of Sir William Smith, LL.D., D.C.L., F.R.S., Editor of the *Quarterly Review*, and was born in the year 1851. He joined as partner the late Mr. William Bryan Wood, surveyor and valuer, of Chippenham, in 1879, and in 1881 became personal agent for the Marquess of Lansdowne's Wiltshire estates, a position he held until the time of his death. Mr. Smith possessed a practical knowledge of agriculture and was a Vice-President of the Surveyor's Institution, a Commissioner of the Lea Valley Drainage, and Gilbey Lecturer on the History and Economics of Agriculture at the Cambridge University, 1900—1903. He was also associated with many other institutions, including the Wiltshire Bacon Curing Factory, of which he was the Chairman and Managing Director. In addition to contributing many articles on agricultural questions to the *Quarterly Review* and *Nineteenth Century*, Mr. Smith published a book entitled, *The Principles of Landed Estate Management*. He became a Member of the Society in the year 1874, and was elected the Member of Council for the division of Wiltshire in 1905. At the time of his death he was a member of the Veterinary Sub-Committee and had taken a very active part in the enquiry

undertaken by the Sub-Committee on the question of the disease of Swine Fever. Mr. Smith, who married Emily, daughter of Mr. Arthur Hall, of the East Indian Civil Service, leaves a son (who was a partner with his father) and two daughters.

T. M.

MR. MARTIN J. SUTTON.

MR. MARTIN JOHN SUTTON, although not a Member of the Council at the time of his decease, was a representative of the Society on the National Agricultural Examination Board, a body composed of representatives of the Highland and Agricultural Society of Scotland, and the Royal Agricultural Society of England, and it is a melancholy fact that only on the Monday previous to his death he was elected Chairman of the Board. He had been a Member of the Society since the year 1878, and subsequently in 1882 became a Governor. He was elected a Member of Council in 1883, and continued to hold that office until the year 1904.

While taking an interest in the livestock section of agriculture, Mr. Sutton will be better remembered by the very valuable services he rendered in connection with the Journal, and the Educational work of the Society. In June, 1900, Mr. Sutton attended, as the Society's delegate, the International Congress in Agricultural Education which was held in Paris, and at which he read a paper dealing with the Society's efforts to promote agricultural education in this country.

In many other directions Mr. Sutton took an active interest in agriculture, and was a Vice-President of the Smithfield Club. He was a Chevalier of the Legion of Honour, and other foreign Orders had been conferred upon him. On the occasion of the General Meeting of Members of the Society held at the Royal Agricultural Hall on Wednesday, December 10, 1913, Mr. Sutton moved a vote of thanks to the Earl of Northbrook, the President, for his services during the year of his Presidency.

As the head of the firm of Sutton and Sons, of Reading, Mr. Sutton possessed great business capacity, which was apparent when matters of importance were under discussion at meetings at which he was present.

Mr. Sutton was born in 1850, and died on December 14, 1913. He was twice married, and leaves two sons and a daughter by the first marriage.

T. M.

Royal Agricultural Society of England.

(Established May 9th. 1838, as the ENGLISH AGRICULTURAL SOCIETY. and incorporated by Royal Charter on March 26th, 1840).

Patron.

HIS MOST GRACIOUS MAJESTY THE KING.

President for 1914.

THE EARL OF POWIS.

Trustees.

Year when
first elected
on Council

1889	H.R.H. PRINCE CHRISTIAN, K.G., <i>Cumberland Lodge, Windsor.</i>
1895	BEDFORD, Duke of, K.G., <i>Woburn Abbey, Bedfordshire.</i>
1871	BOWEN-JONES, Sir J. B., Bart., <i>Council House Court, Shrewsbury.</i>
1893	CORNWALLIS, F. S. W., <i>Linton Park, Maidstone, Kent.</i>
1885	COVENTRY, Earl of, <i>Croome Court, Severn Stoke, Worcestershire.</i>
1898	DEVONSHIRE, Duke of, G.C.V.O., <i>Chatsworth, Chesterfield.</i>
1881	GILBEY, Sir WALTER, Bart., <i>Elsenham Hall, Elsenham, Essex.</i>
1883	JERSEY, Earl of, G.C.B., G.C.M.G., <i>Middleton Park, Bicester, Oxon.</i>
1899	MIDDLETON, Lord, <i>Birdsall House, Malton, Yorks.</i>
1880	MORETON, Lord, <i>Sarsden House, Chipping Norton, Oxon.</i>
1899	NORTHBROOK, Earl of, <i>Stratton, Micheldever, Hampshire.</i>
1881	THOROLD, Sir JOHN H., Bart., <i>Old Hall, Syston, Grantham</i>

Vice-Presidents.

1905	ADEANE, C. R. W., <i>Babraham Hall, Cambridge.</i>
1887	CRUTCHLEY, PERCY, <i>Sunninghill Lodge, Ascot, Berkshire.</i>
1908	DERBY, Earl of, G.C.V.O., C.B., <i>Knowsley, Prescott, Lancashire.</i>
1891	DUGDALE, J. MARSHALL, <i>Llwyn, Llanfyllin S.O., Mont.</i>
1908	FELLOWES, Rt. Hon. Sir AILWYN E., K.C.V.O., <i>Honingham, Norwich.</i>
1876	FEVERSHAM, Earl of, <i>Duncombe Park, Helmsley, Yorkshire.</i>
1900	GREATHEAVES, R. M., <i>Wern, Portmadoc, North Wales.</i>
1904	GREENALL, Sir GILBERT, Bart., O.V.O., <i>Walton Hall, Warrington.</i>
1908	NORTHUMBERLAND, Duke of, K.G., <i>Alnwick Castle, Northumberland.</i>
1881	PARKER, Hon. OECIL T., <i>The Grove, Corsham, Wiltshire.</i>
1913	ROTHSCHILD, Lord, G.C.V.O., <i>Tring Park, Hertfordshire.</i>
1907	YARBOROUGH, Earl of, <i>Brocklesby Park, Lincolnshire.</i>

Ordinary Members of the Council.

1910	ALEXANDER, D. T., <i>Bryneithon, Dinas Powis (Glamorganshire).</i>
1905	AVELING, THOMAS L., <i>Doley Hill House, Rochester (Kent).</i>
1911	BEHRENS, Capt. CLIVE, <i>Swinton Grange, Malton (Yorks., N. Riding).</i>
1911	BETTS, E. W., <i>Babingley, King's Lynn (Norfolk).</i>
1906	BROCKLEHURST, HENRY DENT, <i>Sudeley Castle, Winchcombe (Glos.).</i>
1909	BROCKLEHURST, Maj.-Gen. J. F., O.V.O., C.B., <i>Rankeborough, Oakham (Rutland).</i>
1910	BROWN, DAVIS, <i>Murham Hall, Downham Market (Norfolk).</i>
1906	BUTTAR, THOMAS A., <i>Corston, Coupar Angus (Scotland).</i>
1905	CARDEN, RICHARD GEORGE, <i>Fishmoyne, Templemore, Co. Tipperary (Ireland).</i>
1905	CARR, RICHARDSON, <i>Estate Office, Tring Park (Hertfordshire).</i>

Year when
first elected
on Council

Ordinary Members of the Council (*continued*).

- 1913 CHAPMAN, W. W., *Monobray House, Norfolk Street, W.C. (London)*.
 1909 CROSS, Hon. JOHN E., *High Legh, Knutsford (Cheshire)*.
 1903 EADIE, JOHN T. C., *The Rock, Newton Solney, Burton-on-Trent (Derbyshire)*.
 1911 EVANS, ARTHUR E., *Bronwyfya, Wrexham (North Wales)*.
 1913 EVENS, JOHN, *Burton, near Lincoln (Lincolnshire)*.
 1905 FALCONER, JAMES, *Northbrook Farm, Micheldever Station (Hampshire)*.
 1907 FRANK, SIR HOWARD, 20 *Manover Square, W. (London)*.
 1909 GARNE, W. T., *Aldsworth, Northleach (Gloucestershire)*.
 1906 GLOVER, JAMES W., *Beechwood, Warwick (Warwickshire)*.
 1910 HARLEIGH, Lord, *Brogyntyn, Oswestry (Shropshire)*.
 1905 HARRIS, JOSEPH, *Brackenbrough Tower, Carlisle (Cumberland)*.
 1903 HARRISON, WILLIAM, *Hall House, Leigh (Lancashire)*.
 1911 HASTINGS, Lord, *Melton Constable Park (Norfolk)*.
 1909 HAZLEBIGG, Sir ARTHUR G., Bart., *Noseley Hall (Leicestershire)*.
 1910 HENDERSON, Major H. G., M.P., *Kitemore, Faringdon (Berkshire)*.
 1905 HINE, JOHN HENRY, *Pomphlett Farm, Plymstock, Plymouth (Devon)*.
 1905 HISCOCK, ARTHUR, *Manor Farm, Motcombe, Shaftesbury (Dorset)*.
 1903 HOBBS, ROBERT W., *Kelmescott, Lechlade (Oxfordshire)*.
 1908 HOSKEN, W. J., *Pulsack, Hayle (Cornwall)*.
 1900 HOWARD, JOHN HOWARD, *Clapham Park, near Bedford (Bedfordshire)*.
 1905 INGRAM, WALTER F., 2 *St. Andrew's Place, Lewes (Sussex)*.
 1913 KELLY, DUNBAR, *Coombe Farm, Kingston-on-Thames (Surrey)*.
 1905 KNIGHTLEY, Sir CHARLES V., Bart., *Fawsley, Daventry (Northants)*.
 1912 LANE-FOX, GEORGE R. M.P., *Bramham Park, Boston Spa (Yorks, W.R.)*.
 1909 LUDDINGTON, J. L., *Littleport, Ely (Cambridgeshire)*.
 1909 MANSELL, ALFRED, *College Hill, Shrewsbury (Shropshire)*.
 1904 MATHEWS, ERNEST, *Little Shardeloes, Amersham (Buckinghamshire)*.
 1905 MAY, WILLIAM A., 3 *Wellington Street, Strand, W.C. (London)*.
 1904 MIDDLETON, CHRISTOPHER, *Vane Terrace, Darlington (Durham)*.
 1910 MIDWOOD, G. NORRIS, *The Grange, North Rode, Congleton (Cheshire)*.
 1884 MILLER, T. HOBBOCKS, *Singleton Park, Poulton-le-Fylde (Lancashire)*.
 1911 MYATT, JOHN, *Lynn House, Lichfield (Staffordshire)*.
 1907 NOCTON, WILLIAM, *Langham Hall, Colchester (Essex)*.
 1910 OVERMAN, HENRY, *Weasenham, Stowham (Norfolk)*.
 1909 PATTERSON, R. G., *Acton Hill, Stafford (Staffordshire)*.
 1912 PERKIN, A. W., *Greenford Green, Harrow (Middlesex)*.
 1905 PILKINGTON, CLAUDE M. S., *Wollaton, Nottingham (Nottinghamshire)*.
 1906 PLUMPTRE, H. FITZWALTER, *Goodnestone, near Canterbury (Kent)*.
 1913 RAWLENCE, J. E., *The Chantry, Wilton, Salisbury (Wiltshire)*.
 1905 REA, GEORGE GREY, *Middleton, Wooler (Northumberland)*.
 1897 REYNARD, FREDERICK, *Sunderlandwick, Driffield (Yorks., E. Riding)*.
 1905 RICHMOND AND GORDON, Duke of, K.G., *Goodwood, Chichester (Sussex)*.
 1908 RIDLEY, Viscount, *Blagdon, Crumlington (Northumberland)*.
 1897 ROGERS, C. COLTMAN, *Stanage Park, Brampton Bryan (South Wales)*.
 1905 ROWELL, JOHN, *Bury, Huntingdon (Huntingdonshire)*.
 1913 SEWARD, Capt. PERCY W., *Weston, Petersfield (Hampshire)*.
 1907 SMITH, FRED, *Deben Haugh, Woodbridge (Suffolk)*.
 1891 STANTFORTH, E. WILFRED, *Kirk Hammerton Hall, York (Yorks., W.R.)*.
 1912 STRACHIE, Lord, *Sutton Court, Pensford (Somerset)*.
 1907 TINDALL, C. W., *Wainfleet, S.O. (Lincolnshire)*.
 1904 TURNER, ARTHUR P., *Fayre Oakes, Hereford (Herefordshire)*.
 1889 WHEELER, E. VINCENT V., *Newnham Court, Tenbury (Worcestershire)*.
 1889 WILSON, CHRISTOPHER W., *Rigmaden Park, Kirkby Lonsdale (Westmorland)*.
 1908 WRIGLEY, LOUIS C., *Trelleck Grange, Chepstow (Monmouthshire)*.

STANDING COMMITTEES.

* * Under By-law 39, the PRESIDENT is a Member *ex officio* of all Committees, and the TRUSTEES and VICE-PRESIDENTS are Members *ex officio* of all Standing Committees except the Committee of Selection.

The Honorary Director is a Member ex officio of all Committees.

Finance Committee.

ADEANE, C. R. W. (<i>Chairman</i>).	CARR, RICHARDSON.
DEVONSHIRE, Duke of.	CORNWALLIS, F. S. W.
NORTHBROOK, Earl of.	CRUTCHLEY, PERCY.
FELLOWES, Rt Hon. Sir A. E.	HARRISON, W.
GREENALL, Sir G., Bart.	MANSSELL, ALFRED.
THOROLD, Sir J. H., Bart.	MATHEWS, ERNEST.
AVELING, T. L.	WHEELER, E. V. V.

Journal and Education Committee.

THOROLD, Sir J. H., Bart.	BROCKLEHURST, H. D.	MATHEWS, ERNEST.
(<i>Chairman</i>).	CORNWALLIS, F. S. W.	MAY, W. A.
HASTINGS, Lord.	DUGDALE, J. MARSHALL.	PLUMPTRE, H. F.
MORETON, Lord.	LUDDINGTON, J. L.	SEWARD, Capt.
BOWEN-JONES, Sir J. B., Bart.	MANSSELL, ALFRED.	WHEELER, E. V. V.
ADEANE, C. R. W.		

Chemical and Woburn Committee.

BOWEN-JONES, Sir J. B., Bart.	GREAVES, R. M.	MIDWOOD, G. NORRIS
(<i>Chairman</i>).	HOSKEN, W. J.	PATTERSON, H. G.
HARLECH, Lord.	HOWARD, JOHN HOWARD.	PERKIN, A. W.
HASTINGS, Lord.	INGRAM, W. F.	PILKINGTON, C. M. S.
KNIGHTLEY, Sir C. V., Bart.	LUDDINGTON, J. L.	REYNARD, F.
BROCKLEHURST, H. D.	MAY, W. A.	TINDALL, C. W.
BROCKLEHURST, Maj.-Gen.	MIDDLETON, C.	TURNER, A. P.
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MORETON, Lord.	BROWN, DAVID	PLUMPTRE, H. F.
STRACHIE, Lord.	CORNWALLIS, F. S. W.	SEWARD, Capt.
BOWEN-JONES, Sir J. B., Bart.	LANE-FOX, G. R.	WHEELER, E. V. V.
HAZLERIGG, Sir A. G., Bart.	LUDDINGTON, J. L.	

Veterinary Committee.

NORTHBROOK, Earl of	CARR, RICHARDSON.	*PRESIDENT OF ROYAL
(<i>Chairman</i>).	CRUTCHLEY, PERCY.	COLLEGE OF VET.
STRACHIE, Lord.	EADIE, J. T. C.	SURGEONS.
FELLOWES, Rt. Hon. Sir A. E.	HARNE, W. T.	RAWLENCE, J. E.
PARKER, Hon. C. T.	HARRIS, JOSEPH.	ROWELL, JOHN.
THOROLD, Sir J. H., Bart.	MANSSELL, ALFRED	SMITH, FRED.
*MCFADYEAN, Prof. Sir J.	*MASTER OF FARRIERS'	SEWARD, Capt.
ADEANE, C. R. W.	COMPANY.	STANTFORTH, E. W.
BEHRENS, Capt. CLIVE.	MATHEWS, ERNEST.	SWITHINBANK, H.
BROWN, DAVID.	MILLER, T. H.	WILSON, C. W.

* *Professional Members of Veterinary Committee not*

Members of Council.

Stock Prizes Committee.

REYNARD, F. (<i>Chairman</i>).	CRUTCHLEY, PERCY.	MYATT, JOHN.
COVENTRY, Earl of.	EADIE, J. T. C.	OVERMAN, HENRY.
NORTHBROOK, Earl of.	HARNE, W. T.	REA, G. G.
HARLECH, Lord.	GREAVES, R. M.	ROGERS, C. C.
MIDDLETON, Lord.	HINE, J. H.	ROWELL, JOHN.
BOWEN-JONES, Sir J. B., Bart.	HOBBS, ROBERT W.	SMITH, FRED.
GREENALL, Sir G., Bart.	MANSSELL, ALFRED.	TINDALL, C. W.
BEHRENS, Capt. CLIVE	MATHEWS, ERNEST.	TURNER, A. P.
BROWN, DAVID.	MIDWOOD, G. NORRIS.	WILSON, C. W.
BUTLER, T. A.	MILLER, T. H.	The Stewards of
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CROSS, Hon. J. E.	HARRISON, W.	PILKINGTON, C. M. S.
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ALEXANDER, D. T.	LUDDINGTON, J. L.	WHEELER, E. V. V.
AVELING, T. L.	MIDDLETON, C.	The Stewards of
CRUTCHLEY, PERCY.	MYATT, JOHN.	Implements.
FALCONER, J.		

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GREENALL, Sir G., Bart.	CARR, RICHARDSON.	PILKINGTON, C. M. S.
(<i>Chairman</i>).	CRUTCHLEY, PERCY.	REA, G. G.
ROSS, Hon. J. E.	HARRISON, W.	REYNARD, F.
ALEXANDER, D. T.	HOWARD, J. H.	STANYFORTH, E. W.
AVELING, T. L.	OVERMAN, HENRY.	

Committee of Selection.

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(<i>Chairman</i>).	HARLECH, Lord	OVERMAN, H.
THE PRESIDENT.	AVELING, T. L.	WHEELER, E. V. V.

And the Chairman of each of the Standing Committees.

Dairy and Produce Committee.

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(<i>Chairman</i>).	CRUTCHLEY, PERCY.	KELLY, DUNBAR
HASTINGS, Lord	DUGDALE, J. MARSHALL.	OVERMAN, HENRY.
PARKER, Hon. C. T.	EVENS, JOHN	PLUMPTRE, H. F.
THOROLD, Sir J. H., Bart.	GREAVES, R. M.	SMITH, FRED.
BEHRENS, Capt. OLIVE.	HENDERSON, Major H. G.	WHEELER, E. V. V.

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DEVONSHIRE, Duke of	AVELING, T. L.	*NUTTALL, Prof.
(<i>Chairman</i>).	*BIFFEN, Prof. H. H.	REYNARD, F.
NORTHBROOK, Earl of.	CARR, RICHARDSON.	ROGERS, C. C.
FELLOWES, Rt. Hon. Sir A. E.	*COOPER, W. F.	TINDALL, C. W.
BOWEN-JONES, Sir J. B., Bart.	CORNWALLIS, F. S. W.	*VOELCKER, Dr. J. A.
GREENALL, Sir G., Bart.	CRUTCHLEY, PERCY.	*WARBURTON, C.
THOROLD, Sir J. H., Bart.	GREAVES, R. M.	WHEELER, E. V. V.
*MCFADYEAN, Prof. Sir J.	HARRISON, W.	*WOOD, Prof. T. D.
ADAMS, C. R. W.	MATHEWS, ERNEST.	

* *Scientific Members of Special Committee not Members of Council.*

General Shrewsbury Committee.

THE COUNCIL, with the following representatives of the LOCAL COMMITTEE:—

THE MAYOR OF SHREWSBURY.	LLOYD, Col. A. H. O.
BLOWER, B.	PRIDEAUX, R. F., <i>Town Clerk.</i>
CLARKE, H. C.	STANIER, BEVILL, M. P.
CURETON, Dr.	CLOTHIER, EDWARD, <i>Local Secretary.</i>

Honorary Director.—SIR GILBERT (GREENALL, BART., C.V.O.)

Secretary.—THOMAS MORROW, 16 Bedford Square, W.C.

Editor of Journal.—C. S. ORWIN, Hon. M. A., *Agricultural Economics Institute, Oxford.*

Consulting Chemist.—Dr. J. AUGUSTUS VOELCKER, M.A., F.I.C., 1 Tudor Street, London, E.C.

Consulting Veterinary Surgeon.—Prof. Sir JOHN MCFADYEAN, *Royal Veterinary College, Camden Town, N.W.*

Botanist.—Professor R. H. BIFFEN, M.A., *School of Agriculture, Cambridge.*

Zoologist.—CECIL WARBURTON, M.A., *School of Agriculture, Cambridge.*

Consulting Engineer.—F. S. COURTNEY, 25 Victoria Street, Westminster, S.W.

Surveyor.—J. R. NAYLOR, F.R.I.B.A., *Smith's Bank Chambers, Derby.*

Consulting Surveyor.—GEORGE HUNT, *Evesham, Worcestershire.*

Publisher.—JOHN MURRAY, 50A Albemarle Street, W.

Solicitors.—GARRARD, WOLFE, GAZE & CLARKE, 13 Suffolk Street, S.W.

Bankers.—THE LONDON COUNTY AND WESTMINSTER BANK, *St. James's Square*

DISTRIBUTION OF GOVERNORS AND MEMBERS OF THE
SOCIETY, AND OF ORDINARY MEMBERS OF THE COUNCIL.

ELECTORAL DISTRICT	DIVISION	NUMBER OF GOVERNORS AND MEMBERS	NUMBER OF ORDINARY MEMBERS OF COUNCIL	ORDINARY MEMBERS OF COUNCIL
A.	BEDFORDSHIRE . . .	93	1	J. H. Howard.
	CHESHIRE . . .	343	2	Hon. J. E. Cross; G. Norris Mid-wood.
	CORNWALL . . .	92	1	W. J. Hocken.
	DERBYSHIRE . . .	143	1	J. T. O. Eadie.
	DORSET . . .	91	1	A. Hiscock.
	HAMPSHIRE AND CHANNEL ISLANDS . . .	325	2	J. Falconer; Capt. Percy Seward.
	HERTFORDSHIRE . . .	218	1	Richardson Carr.
	LANCASHIRE AND ISLE OF MAN . . .	304	2	W. Harrison; T. H. Miller.
	MIDDLESEX . . .	106	1	A. W. Perkin.
	MONMOUTHSHIRE . . .	89	1	L. O. Wrigley.
	NORFOLK . . .	612	4	{ E. W. Betts; Davis Brown; Lord Hastings; Henry Overman.
	NORTHAMPTONSHIRE . . .	196	1	Sir C. V. Knightley.
	NORTHUMBERLAND . . .	205	2	G. G. Rea; Viscount Ridley.
	STAFFORDSHIRE . . .	276	1	John Myatt; R. G. Patterson.
	WORCESTERSHIRE . . .	198	1	E. V. V. Wheeler.
	YORKSHIRE, N.E. . .	193	1	Capt. Clive Behrens.
	SCOTLAND . . .	224	1	T. A. Buttar.
		—3,838	—25	
B.	BUCKINGHAMSHIRE . . .	145	1	E. Mathews.
	DEVON . . .	176	1	J. H. Hine
	DURHAM . . .	127	1	C. Middleton.
	ESSEX . . .	205	1	W. Nocton.
	HEREFORDSHIRE . . .	142	1	A. P. Turner.
	LEICESTERSHIRE . . .	189	1	Sir A. G. Hazlerigg.
	LONDON . . .	562	3	{ W. W. Chapman; Sir Howard Frank; W. A. May.
	NOTTINGHAMSHIRE . . .	159	1	C. M. S. Pilkington.
	RUTLAND . . .	87	1	Maj.-Gen. J. F. Brocklehurst.
	SHROPSHIRE . . .	362	2	Lord Harlech; Alfred Mansell.
	SUFFOLK . . .	241	1	Fred Smith.
	SURREY . . .	230	1	Dunbar Kelly.
	WILTSHIRE . . .	174	1	James E. Rawlence.
	YORKSHIRE, W.E. . .	349	2	G. R. Lane-Fox, M.P.; E. W. Stanforth.
C.	SOUTH WALES . . .	107	1	C. O. Rogers.
		—3,195	—19	
	BERKSHIRE . . .	180	1	Major H. G. Henderson, M.P.
	CAMBRIDGESHIRE . . .	178	1	J. L. Luddington.
	CUMBERLAND . . .	107	1	Joseph Harris.
	GLAMORGAN . . .	88	1	D. T. Alexander.
	GLOUCESTERSHIRE . . .	396	2	H. D. Brocklehurst; W. T. Garne.
	HUNTINGDONSHIRE . . .	46	1	John Rowell.
	KENT . . .	355	2	T. L. Aveling; H. F. Plumtre.
	LINCOLNSHIRE . . .	353	2	John Evans; C. W. Tindall.
	OXFORDSHIRE . . .	184	1	R. W. Hobbs.
	SOMERSET . . .	169	1	Lord Strachey.
	SUSSEX . . .	290	2	{ W. F. Ingram; Duke of Richmond and Gordon.
	WARWICKSHIRE . . .	232	1	J. W. Glover.
	WESTMORLAND . . .	56	1	C. W. Wilson.
	YORKSHIRE, E.E. . .	163	1	F. Reynard.
	IRELAND . . .	118	1	R. G. Carden.
	NORTH WALES . . .	186	1	A. E. Evans
		—3,079	—20	
FOREIGN COUNTRIES . . .		323		
MEMBERS WITH NO ADDRESSES . . .		13		
GRAND TOTALS . . .		10,448	64	

TABLE SHOWING THE NUMBER OF GOVERNORS AND MEMBERS
IN EACH YEAR FROM THE ESTABLISHMENT OF THE SOCIETY.

Year ending with Show of	President of the Year	Governors		Members			Total
		Life	Annual	Life	Annual	Honor- ary	
1839	3rd Earl Spencer	—	—	—	—	—	1,100
1840	5th Duke of Richmond	86	189	146	2,434	5	2,860
1841	Mr. Philip Pusey	91	219	231	4,047	7	4,595
1842	Mr. Henry Handley	101	211	328	5,194	15	5,849
1843	4th Earl of Hardwicke	94	209	429	6,155	15	6,902
1844	3rd Earl Spencer	95	214	442	6,181	15	6,927
1845	5th Duke of Richmond	94	198	527	5,899	15	6,733
1846	1st Viscount Portman	92	201	554	6,105	19	6,971
1847	6th Earl of Egmont	91	195	607	5,478	20	6,391
1848	2nd Earl of Yarborough	94	188	648	5,387	21	6,335
1849	3rd Earl of Chester	89	178	582	4,643	20	5,512
1850	4th Marquis of Downshire	90	169	627	4,356	19	5,261
1851	5th Duke of Richmond	91	162	674	4,175	19	5,121
1852	2nd Earl of Dunc	93	158	711	4,002	19	4,981
1853	2nd Lord Ashburton	90	147	739	3,928	19	4,923
1854	Mr. Philip Pusey	88	146	771	4,152	20	5,177
1855	Mr. William Miles, M.P.	89	141	793	3,838	19	4,882
1856	1st Viscount Portman	85	139	839	3,896	20	4,979
1857	Viscount Ossington	83	137	896	3,853	19	5,068
1858	6th Lord Berners	81	133	904	4,010	18	5,146
1859	7th Duke of Marlborough	78	130	927	4,008	18	5,161
1860	5th Lord Walsingham	72	119	927	4,047	18	5,183
1861	3rd Earl of Powis	84	90	1,113	3,328	18	4,693
1862	H.R.H. The Prince Consort 1st Viscount Portman	83	97	1,151	3,475	17	4,823
1863	Viscount Eversley	80	88	1,263	3,735	17	5,183
1864	2nd Lord Feversham	78	45	1,343	4,013	17	5,496
1865	Sir E. O. Kerrison, Bart., M.P.	79	81	1,386	4,190	16	5,752
1866	1st Lord Tredegar	79	84	1,395	4,049	15	5,622
1867	Mr. H. S. Thompson	77	82	1,388	3,903	15	5,465
1868	6th Duke of Richmond	75	74	1,409	3,888	15	5,461
1869	H.R.H. The Prince of Wales, K.G.	75	73	1,417	3,864	17	5,446
1870	7th Duke of Devonshire	74	74	1,511	3,761	15	5,436
1871	6th Lord Vernon	72	74	1,589	3,896	17	5,648
1872	Sir W. W. Wynn, Bart., M.P.	71	78	1,635	3,953	14	5,768
1873	Earl Cathcart	74	82	1,832	3,936	12	5,916
1874	Mr. Edward Holland	76	58	1,944	3,756	12	5,846
1875	Viscount Bridport	79	79	2,058	3,918	11	6,145
1876	2nd Lord Chesham	83	78	2,184	4,013	11	6,349
1877	Lord Skelmersdale	81	76	2,239	4,073	17	6,486
1878	Col. Kingscote, C.B., M.P.	81	72	2,328	4,130	20	6,637
1879	H.R.H. The Prince of Wales, K.G.	81	72	2,453	4,700	26	7,332
1880	6th Duke of Bedford	83	70	2,673	5,083	20	7,929
1881	Mr. William Wells	85	69	2,765	5,041	19	7,979
1882	Mr. John Dent Dent	82	71	2,849	5,069	19	8,080
1883	6th Duke of Richmond and Gordon	78	71	2,979	4,953	19	8,049
1884	Sir Brandreth Gibbs	72	72	3,203	5,408	21	8,776
1885	Sir M. Lopes, Bart., M.P.	71	69	3,336	5,619	20	9,135
1886	H.R.H. The Prince of Wales, K.G.	70	61	3,414	5,569	20	9,134
1887	Lord Egerton of Tatton	71	64	3,440	5,397	20	8,982
1888	Sir M. W. Ridley, Bart., M.P.	66	56	3,521	5,225	16	8,884
1889	H.E. MAJESTY QUEEN VICTORIA	78	58	3,567	7,153	15	10,866
1890	Lord Moreton	122	58	3,646	6,041	17	10,984
1891	2nd Earl of Ravensworth	117	60	3,811	6,021	19	10,923
1892	Earl of Feversham	111	69	3,781	7,066	20	11,050
1893	1st Duke of Westminster, K.G.	107	74	3,786	7,136	21	11,123
1894	8th Duke of Devonshire, K.G.	113	73	3,798	7,212	22	11,318
1895	Sir J. H. Thorold, Bart.	120	80	3,747	7,179	23	11,749
1896	Sir Walter Gilbey, Bart.	126	83	3,695	7,253	23	11,780
1897	H.R.H. The Duke of York, K.G.	126	83	3,705	7,285	24	11,323
1898	5th Earl Spencer, K.G.	121	79	3,687	7,182	25	11,094
1899	Earl of Coventry	116	75	3,656	7,009	23	10,879
1900	H.R.H. The Prince of Wales, K.G.	111	71	3,628	6,882	24	10,666
1901	3rd Earl Cawdor	102	70	3,564	6,838	27	10,683
1902	H.R.H. Prince Christian, K.G.	100	69	3,500	5,955	26	9,650
1903	H.R.H. The Prince of Wales, K.G.	99	62	3,439	5,771	27	9,308
1904	16th Earl of Derby, K.G.	96	68	3,375	5,906	32	8,477
1905	Lord Middleton	89	78	3,212	5,758	33	8,170
1906	Mr. F. S. W. Cornwallis	94	155	3,132	6,189	30	9,600
1907	Earl of Yarborough	91	174	3,076	6,290	29	9,669
1908	Duke of Devonshire	89	178	3,019	6,442	30	9,758
1909	Earl of Jersey, G.C.B.	91	177	2,951	6,696	31	9,948
1910	Sir Gilbert Greenall, Bart.	86	166	2,878	6,934	31	10,095
1911	HIS MAJESTY KING GEORGE V.	85	168	2,806	7,181	30	10,279
1912	Lord Middleton	85	170	2,741	7,283	30	10,308
1913	Earl of Northbrook	89	188	2,681	7,474	28	10,448

**STATEMENT made to the Council by the Chairman
of the Finance Committee, on presenting the
Accounts for the year 1913.**

Mr. ADRIANE, in presenting, on behalf of the Finance Committee, the accounts of the Society for the year 1913, said that the income for that year was 10,443*l.*, and that he would like to draw the attention of the Council to the fact that the subscriptions from Governors and Members amounting to 8,372*l.* was a record for the Society. Their income for the year was somewhat swollen by the sum of 235*l.*, which, it would be noticed, the Society had received in connection with the sale of the carcasses of the animals in the Tuberculosis experiment. The Council would be pleased to hear that, although they allotted 800*l.* as the limit of expenditure for these experiments, the net cost of them was only 605*l.* He would like to make acknowledgment of the great generosity of Lord Rothschild in supplying them with calves for the experiment, and thus saving the Society a great deal of expense. The expenditure for the year had been 9,891*l.*, and as extra items there were the two following large sums—repainting the house, 272*l.*, and the trials of milking machines, 343*l.* The credit balance for the year was 552*l.* With regard to the balance-sheet, he thought it was most satisfactory, and that he need only remark that the Reserve Fund, which stood at 43,428*l.* at the end of 1912, was, on December 31, 1913, 52,228*l.* It would be noticed that the value of Consols on December 31 had been 71½, while at present he was glad to say they stood at 76½. The Metropolitan Three per Cent. Consolidated Stock which they had bought at 87½ now stood at 90, and the Canadian Four per Cent. Stock which they purchased at 96½ stood at 103½, so that their financial position was not so bad as it appeared. He then presented the forecast of receipts and expenditure for the year 1914, as follows :—

FORECAST OF ORDINARY RECEIPTS AND EXPENDITURE FOR 1914.
(Other than in respect of the Show.)

Prepared by direction of the Finance Committee on the basis of the recommendations of September 21, 1905, made by the Special Committee.

Actual Figures for 1913.	<i>Receipts.</i>	<i>£</i>
<i>£</i>		<i>£</i>
8,373	From Subscriptions for 1914 of Governors and Members	8,350
249	From Interest on Daily Balances	150
1,292	From Interest on Investments	1,550
293	From Sales of Text Book, Pamphlets, &c. (This does not include the sales of Journals which are deducted from the cost of production)	270
236	Sale of Carcasses (Tuberculosis Experiment).	—
10,443		10,820

<i>Expenditure.</i>	
£	£
1,577 Salaries of Secretary and Official Staff	1,588
140 Pensions to Officials	140
733 Rent, Lighting, Cleaning, Wages, &c. (say)	720
546 Printing and Stationery	550
176 Postage and Telegrams	200
456 Miscellaneous	400
880 Journal	880
768 Chemical Department	700
250 Botanical Department	250
200 Zoological Department	200
402 Veterinary Department	400
221 Examinations for National Diplomas (R.A.S.E. Share)	220
2,500 Contribution from Subscriptions to Show Fund	2,500
<hr/> 8,844	<hr/> 8,806

<i>Exceptional Expenditure.</i>	
£	£
— Contribution to Veterinary Congress	26
— Rewards for Skilled Agricultural Labour and Long Service	150
— Elements of Agriculture	400
— Printing Index to Journal	100
— Preparing Catalogue for Library and Binding	50
— Woburn Experimental Station	133
172 Calf Experiments	—
344 Trials of Milking Machines	—
41 Trials of Spraying Machines	—
272 Painting of Society's Premises	—
37 Overhauling and Repairs to Electric Light Fittings	—
109 Contribution to Bristol Overseas Committee	—
28 Printing Tuberculosis Report	—
29 Printing Swine Fever Report	—
32 Hills' Bequest—Excess Expenditure for 1913	35
<hr/> 9,889	<hr/> 9,700
Total Estimated Expenditure	

Estimated Receipts	£ 10,320
Estimated Expenditure	9,700
	<hr/> 620

Royal Agricultural Society of England.

STATEMENT OF FUNDS HELD BY THE SOCIETY IN TRUST OR WHICH ARE NOT CONSIDERED AVAILABLE FOR GENERAL PURPOSES, DECEMBER 31, 1913.

To Hills' Bequest for Pot-culture Experiments .	£	s.	d.			
	9,000	0	0			
<hr/>						
To Fund provided by Sir Walter Gilbey for Endowment of Lectureship at Cambridge until July 31, 1917, when any balance on this account will become the property of the Society .	1,049	17	0			
	£1,049	17	0			
<hr/>						
To Superannuation and Insurance Fund :— Amount set aside in accordance with Declaration of Trust of July 26, 1911 .	9,171	5	0			
Accumulations to December 31, 1913 .	310	3	3			
	£9,481	8	3			
<hr/>						
By 8,12½. 8s. 2d. Consols at cost .				£	s.	d.
				9,000	0	0
<hr/>						
By 1.140½ Metropolitan Water A Stock at cost .				998	1	0
By amount included in the Society's Sundry Creditors' Account :—				£	s.	d.
Fund uninvested .				1	19	0
Accumulated income .				49	17	0
				£1	16	0
				£1,049	17	0
<hr/>						
By Investments in names of Trustees of Superannuation and Insurance Fund, viz. :—						
11,400½ Consols at cost .				9,171	5	0
(Value on December 31, 1913, at 71½ = £7,878 15 0).						
129½. 4s. 9d. West Australian 3½% at cost .				120	9	8
60½ 8s. 2d. Queensland 3¼% at cost .				56	17	4
Cash at Bank .				132	15	11
				£9,181	8	3
<hr/>						

Examined, audited, and found correct, this 27th day of January, 1914.

THOMAS MCROW, Secretary.

WELTON, JONES & CO., Accountants.

JONAS M. WEBB,
HUBERT J. GREENWOOD,

ROYAL AGRICULTURAL

Dr

BALANCE-SHEET,

Corresponding figures for 1912.		£	s.	d.	£	s.	d.	£	s.
	To SUNDRY CREDITORS—								
2,838	Sundry Creditors				2,666	17	4		
151	Subscriptions received in 1913 in advance					90	0	0	
2,015	Show Receipts received in 1913 and belonging to 1914				1,587	15	8		
5,004								4,294	13
	To CAPITAL—								
49,484	As at December 31, 1912				51,478	2	10		
	BALANCE FROM SHOW FUND—								
	Profit on Show at Bristol	3,115	1	7					
	Contribution from Ordinary Account	2,500	0	0					
1,268					5,615	1	7		
687	Life Compositions received in 1913				709	0	0		
68	Donations towards the Society's Funds				52	0	0		
353	Credit Balance on Ordinary Income and Expenditure Account				552	1	5		
51,860					58,406	5	10		
	DEPRECIATIONS written off, viz. —								
	Fixtures			28	11	8			
	Furniture			115	16	1			
	Machinery			6	11	0			
	Show Plant			149	0	1			
	Buildings at Woburn			50	0	0			
382					849	18	10		
51,478								58,056	7

£56,482

£62,351 0

THOMAS MCROW, Secretary.

WELTON, JONES & CO., Accountants.

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Examined, audited, and found correct, this 27th day of January, 1914.
 JONAS M. WEBB.
 HUBERT J. GREENWOOD, } *Auditors on behalf of the Society.*

JONAS M. WEBB.
HUBERT J. GREENWOOD, } *Auditors on behalf of the Society.*

STATEMENT OF ORDINARY INCOME

The Expenditure in this account includes not only cash payments,

Corresponding figures
for 1912

Income.

		£	s	d	£	s	d
6	ANNUAL SUBSCRIPTIONS:—						
922	Governors: Subscriptions for 1913	949	0	0			
92	Members: Received in 1912, but belonging to 1913	151	6	6			
6832	Subscriptions for 1913	6974	13	0			
153	Subscriptions for 1913 (additional)	141	2	0			
76	Subscriptions for previous years	63	0	0			
	LIFE GOVERNORS AND MEMBERS:—						
108	Annual Contributions	83	17	0			
8,158					8,372	18	0
	MISCELLANEOUS:—						
105	Interest on Daily Balances	249	7	9			
1,214	Income from Investments	1,292	3	9			
27	Sales of Pamphlets, Diagrams, &c.	38	7	4			
226	Sales of Text Book	231	19	10			
—	Sales of Carcasses in connection with Tuberculosis Experiment	235	15	6			
25	Miscellaneous	22	13	6			
1,577					2,070	6	8
	Rent of 12 Hanover Square	310	15	0			
	Less Rent paid	310	13	0			

£9,755£10,443 4 8

THOMAS MCROW, *Secretary*.
WELTON, JONES & CO., *Accountants*.

AND EXPENDITURE FOR THE YEAR 1913.

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but all liabilities in connection with the year's transactions.

Corresponding figures for 1912	Expenditure.	£ s. d.	£ s. d.
	GENERAL ADMINISTRATION:—		
1,566	Salaries of Official Staff	1,576 14 0	
140	Pensions to Officials	140 0 0	
59	Professional Charges:—Auditors' and Solicitors' Fees	153 18 0	
725	Rent Rates, Taxes, Insurance, and House Expenses	732 19 1	
20	Purchase of Books	15 12 1	
582	Printing and Stationery	515 12 11	
216	Postage and Telegrams	175 16 2	
88	Carriage of Parcels and Travelling Expenses (including annual visit to Woburn)	86 8 11	
125	Advertising and Miscellaneous Office Expenses	92 9 7	
3 521			3,519 10 9
	JOURNAL OF THE SOCIETY, VOL. 74:—		
625	Printing and Binding	693 14 4	
205	Postage, Packing, and Delivery	205 0 0	
270	Editing and Literary Contributions	278 10 0	
70	Illustrations	64 0 0	
1,170		1,221 4 4	
70	<i>Less</i> Sales (Vol. 73 and earlier)	£ 79 19 3	
270	Advertisements (Vol. 74)	280 0 0	
340		357 19 3	
890		861 3 1	
17	Add:—Debit Balance from Vol. 73	18 14 11	
547			880 0 0
241	ELEMENTS OF AGRICULTURE:—		
—	Binding New Edition		55 6 8
—	PAMPHLETS:—		
—	Printing, &c.		53 14 6
766	LABORATORY:—		
—	Salaries, Wages, &c.		763 0 8
255	OTHER SCIENTIFIC DEPARTMENTS:—		
200	Botanist's Salary	250 0 0	
400	Zoologist's Salary	300 0 0	
2	Grant to Royal Veterinary College	400 0 0	
557	Medals for Proficiency in Cattle Pathology	2 6 6	
174			852 6 6
43	NATIONAL DIPLOMA IN AGRICULTURE:—		
44	Honoraria and Expenses of Examiners	167 17 0	
41	Travelling Expenses of Officials	60 14 7	
44	Hotel Expenses of Examiners and Officials	41 10 2	
15	Printing, Stationery, and Postage	51 9 5	
49	Writing Diplomas	15 12 6	
366	Salaries for Assistants	49 10 0	
107		339 13 8	
259	<i>Less</i> Entry Fees and Sales of Examination Papers	123 8 6	
130		267 5 2	
129	<i>Less</i> Highland and Agricultural Society's Moiety	183 13 7	
24			133 12 7
41	NATIONAL DIPLOMA IN DAIRYING:—		
24	Hire of Premises, &c.	32 4 1	
5	Fees to Examiners	54 5 9	
94	Hotel and Travelling Expenses	27 0 4	
40	Printing and Postage	10 17 0	
54		124 7 2	
—	<i>Less</i> Entry Fees and Sales of Examination Papers	36 17 7	
—			87 9 7
—	EXTRA EXPENDITURE:—		
—	Cult Experiments at Woburn (Sales—see contra)	173 4 1	
—	Trials of Milking Machines	343 19 9	
—	Trials of Spraying Machines	41 4 0	
—	Painting of Society's Premises	272 10 7	
—	Overhauling and Repair to Electric Light Fittings	26 18 6	
—	Contribution to Bristol Overseas Committee	100 0 0	
—	Printing Tuberculosis Experiment Report	28 10 0	
—	Printing Swine Fever Report	28 10 6	
—	Hills' Bequest:—Excess expenditure for 1912	32 4 7	
487			1,046 2 0
2,500	CONTRIBUTION TO SHOW FUND		2,500 0 0
353		9,891 3 3	
59 755	CREDIT BALANCE CARRIED TO BALANCE-SHEET	552 1 8	
			£10,443 4 8

Examined, audited, and found correct, this 27th day of January, 1914.

JONAS M. WEBB,
HUBERT J. GREENWOOD, } Auditors on behalf of the Society.

STATEMENT OF RECEIPTS AND EXPEN- JULY 1 TO

Corresponding figures for 1912		Receipts.	£ s. d.	£ s. d.
£				
2,000		Subscription from Bristol Local Committee.		2,000 0 0
502		Prizes given by Agricultural and Breed Societies.	2,278 5 6	
1 3 1		Do. do. Bristol Local Committee.	1,040 0 0	
				4,218 5 6
290		Contribution from Gloucestershire Agricultural Society.		100 0 0
		FEES FOR ENTRY OF IMPLEMENTS:—		
6,366		Implement Exhibitors' Payments, for Shedding.	7,245 14 9	
179		Non-Members' Fees, for Entry of Implements.	214 0 0	
52		Fees, for Entry of "New Implements".	49 0 0	
6,597				7,508 14 9
		FEES FOR ENTRY OF LIVE STOCK:—		
		By 2,676 Members' Entries @ 17..	2,676 0 0	
		32 Substituted Entries @ 5s.	8 0 0	
		By 210 Non-Members' Entries @ 21..	420 0 0	
		Horse Boxes, (448 @ 17.; 86 @ 21.)	593 0 0	
		46 Entries @ 10s.	23 0 0	
		221 Entries @ 5s.	56 0 0	
1,675				3,781 0 0
		FEES FOR ENTRY OF POULTRY:—		
32		By Members:—244 Entries @ 2s. 6d..	30 15 0	
173		By Non-Members:—1,189 Entries @ 3s. 6d..	208 1 6	
205				238 16 6
		OTHER ENTRY FEES:—		
63		Produce.	86 14 8	
53		Horse-shoeing Competitions.	72 0 0	
4		Butter-making Competitions.	26 12 6	
57		Horse-jumping Competitions.	71 1 0	
114		Farm Prize Competitions.	72 0 0	
17		Plantations Competitions.	31 18 0	
308				380 6 0
		CATALOGUE:—		
22		Extra Lines for Particulars of Implement Exhibits.	17 18 0	
6		Woodcuts of "New Implements."	1 6 11	
406		Advertising in Catalogue.	437 5 0	
20		Sales of Implement Section of Catalogue.	19 8 11	
438		Sales of Combined Catalogue.	652 2 10	
17		Sales of Jumping Programme.	18 0 0	
401			1,149 1 8	
31		Less Commission on Sales.	31 16 0	
876				1,118 5 8
		MISCELLANEOUS RECEIPTS:—		
—		Admission to Horticultural Exhibition.	620 17 0	
47		Admission to Garage.	111 5 6	
13		Admission to Dog Show (25 % of net taking.)	18 18 7	
75		Premium for Supply of Refreshments.	75 0 0	
104		Rent for Railway Offices.	94 1 0	
60		Premium for Cloak Rooms.	60 0 0	
30		Rent for Board of Agriculture Pavilion.	30 0 0	
—		Nurse Cows.	12 0 0	
—		Advertisements in Stock Schedule.	128 17 7	
—		Advertisements in Showyard.	11 17 0	
30		Miscellaneous.	6 5 11	
409				1,199 2 7
£24,753		Carried forward.		£20,811 11 0

DITURE OF THE SHOW AT BRISTOL,

xv

5, 1913.

Corresponding figures for 1912.

Expenditure.

		£ s. d.	£ s. d.
	COST OF ERECTION OF SHOWYARD:—		
1,232	Transferring Society's Permanent Buildings from Doncaster to Bristol (including taking down and re-erecting).	1,457	18 6
537	Fencing round Showyard	781	2 3
1,396	Implement Shedding	1,397	2 8
2,988	Stock Shedding	3,151	10 3
365	Poultry and Produce Sheds	381	16 4
300	Dairy	306	11 10
64	Fodder Shed and Office	63	10 0
351	Grand Stand and Large Ring	358	2 8
132	Horse-shoeing Shed and Stabling	129	18 0
580	Various Offices and Stands	870	6 8
346	Printing Signs and Fixing do., Fencing and Judging Rings	493	5 6
175	Education and Forestry Exhibition	236	17 1
13	Insurance	38	17 9
9	Ironmongery	16	7 10
1,158	Hire of Canvas and Felt	1,137	19 3
783	General Labour and Horse Hire (including Society's Clerk of Works)	888	5 1
		11,492	11 8
10,429		40	0 0
40			
10,389			11,452 11 8
	SURVEYOR:—		
328	Salary, 300l.; Assistant Surveyor's Salary (half year), 50l.; Travelling Expenses to London, 29l. 8s.; Petty Cash, 3l. 15s. }		383 3 0
	PRINTING:—		
616	Printing of Prize Sheets, Entry Forms, Admission Orders, Circulars to Exhibitors, Prize Cards, &c., Tickets, and Miscellaneous	658	6 0
144	Programmes for Members	55	16 0
28	Plans of Showyard	37	3 6
846	Printing of Catalogues	899	19 7
67	Binding of Catalogues	78	8 6
20	Carriage of Catalogues	19	4 10
46	Printing Awards	72	1 8
10	Programmes of Jumping Competitions	18	19 0
1,777			1,839 18 8
	ADVERTISING:—		
171	Advertising Closing of Entries in Newspapers	167	14 8
263	Advertising Show in Newspapers	335	10 1
632	Bill Posting	620	0 5
323	Printing of Posters	348	6 2
120	Press Visit before Show	114	6 7
1,815			1,583 17 11
	POSTAGE, CARRIAGE, &c.:—		
116	General Postage	120	1 0
30	Postage of Badges to Members	42	17 8
15	Carriage of Luggage	9	17 0
167			172 15 8
	AMOUNT OF MONEY PRIZES AWARDED, including 4,218l. 3s. 8d. given by various Societies and Bristol Local Committee (see receipt per contra)		
4,687			9,740 15 6
—	Gold Cup		52 10 0
	COST OF FORAGE FOR LIVE STOCK:—		
722	Hay, 309l. 13s. 10d.; Straw, 620l. 18s. 4d.; Green Food, 487l. 1s. 7d.; Labour, 80l. 11s. 4d.; Commission on Sales, 7l. 11s. 0d.; Insurance, 5l. 12s. 6d.; Miscellaneous, 4l. 4s. 2d.	1,525	13 9
	Less Sales of Litter	5	0 0
			1,520 13 9
	JUDGES' FEES AND EXPENSES:—		
380	Judges of Miscellaneous Implements, 20l. 0s. 7d.; Horses, 118l. 6s. 8d.; Cattle, 188l. 14s.; Sheep, 151l. 14s. 6d.; Pigs, 39l. 3s. 8d.; Poultry, 20l. 14s. 10d.; Butter, 4l. 1s.; Butter-making, 8l.; Cheese, 8l. 17s. 10d.; Older and Perry, 11l. 9s. 6d.; Wool, 5l. 0s. 4d.; Horse-shoeing, 29l. 13s. 2d.; Luncheons, 28l.		597 16 1
46	Badges for Judges and other Officials		82 5 11
41	Rosettes		19 2 10
20,052			237,365 11 7
	Carried forward		

Corresponding figures for 1911.

Receipts (contd.).

£	s	d	£	s	d
14,753			20,511	11	0

Brought forward

ADMISSIONS TO SHOWYARD —

347	Tuesday July 1 @ 5s	45	0	6
1 92	Wednesday July 2 @ 2s 6d (after 5 p.m. a 1s)	2072	10	
2 175	Thursday July 3 @ 2s 6d (after 5 p.m. a 1s)	2075	15	1
1 114	Friday, July 4 @ 1s	5765	12	0
929	Saturday July 5 @ 1s	2063	7	3
28	Season Tickets	534	14	6
39	Day Tickets	120	7	10
6862		12,250	7	5

ENTRANCES TO HORSE RING —

106	Wednesday July 2	190	7	0
172	Thursday, July 3	209	3	0
131	Friday, July 4	274	0	0
53	Saturday July 5	136	2	0
275	Tickets sold for Reserved Enclosure	570	19	6
739		1366	17	6

SALES:—

63	Sales of Produce at Dairy	208	10	10
—	Auction Sales in Show yard and Share of Commission	374	17	3

1233 Debt to Balance

£23 6s 0d

£34,712 £ 0

Examined, audited, and found correct, this 27th day of November 1913.

THOMAS MORROW, Secretary
WELTON, JONES & CO., Accountants.JONAS M. WEBB
H. J. GREENWOOD,
NEWELL F. SQUAREY, } Auditors on
behalf of
the Society.

Corresponding figures for 1913.

20,052

Expenditure (contd.).

	£	s.	d.	£	s.	d.
Brought forward				27,395	11	7
GENERAL ADMINISTRATION:—						
<i>Stewards:—</i> Personal and Railway Expenses	146	5	7			
<i>Assistant Stewards:—</i> Personal and Railway Expenses	159	3	3			
<i>Official Staff:—</i> Extra Clerks, 85 <i>l.</i> 10 <i>s.</i> 8 <i>d.</i> ; Lodgings, 40 <i>l.</i> 13 <i>s.</i> 6 <i>d.</i> ; Maintenance of Clerks, 40 <i>l.</i> 0 <i>s.</i> 8 <i>d.</i> ; Travelling Expenses, 13 <i>l.</i> 17 <i>s.</i> 8 <i>d.</i> ; Secretary's Hotel and Travelling Expenses, 68 <i>l.</i> 10 <i>s.</i> 9 <i>d.</i>	246	12	8			
<i>Finance Office:—</i> Superintendent of Turnstiles, 11 <i>l.</i> 10 <i>s.</i> ; Grand Stand Men, 37 <i>l.</i> 18 <i>s.</i> 1 <i>d.</i> ; Turnstile Men, 35 <i>l.</i> 10 <i>s.</i> ; Bank Clerks, 24 <i>l.</i> 18 <i>s.</i> 9 <i>d.</i>	109	12	10			
<i>Awards Office:—</i> Clerks, 27 <i>l.</i> 1 <i>s.</i> 2 <i>d.</i> ; Awards Boys, 9 <i>l.</i> 7 <i>s.</i> 6 <i>d.</i> ; Refreshments, 2 <i>l.</i> 18 <i>s.</i>	39	6	8			
				701	1	0
General Management:—						
Foreman and Assistant Foremen	132	15	1			
Yardmen and Foddermen	75	18	7			
Door and Gate Keepers	84	9	10			
<i>Veterinary Department:—</i> Veterinary Inspectors	100	2	4			
<i>Engineering Department:—</i> Consulting Engineer and Assistants, 108 <i>l.</i> 8 <i>s.</i> 11 <i>d.</i> ; House and Maintenance, 14 <i>l.</i> 12 <i>s.</i> 8 <i>d.</i>	123	2	7			
<i>Police, &c.:—</i> Metropolitan Police, 590 <i>l.</i> 2 <i>s.</i> 7 <i>d.</i> ; Commissionersaires, 38 <i>l.</i> 5 <i>s.</i> 8 <i>d.</i>	623	8	3			
				1,139	14	8
Garage:— Superintendent, Foreman and Assistants	37	12	6			
<i>Dairy:—</i> Staff, 127 <i>l.</i> 0 <i>s.</i> 7 <i>d.</i> ; Milk, 98 <i>l.</i> 17 <i>s.</i> 6 <i>d.</i> ; Ice, 15 <i>l.</i> 5 <i>s.</i> 6 <i>d.</i> ; Cream, 48 <i>l.</i> 8 <i>s.</i> 6 <i>d.</i> ; Utensils, 79 <i>l.</i> 5 <i>s.</i> 11 <i>d.</i> ; Salt, 7 <i>l.</i> 12 <i>s.</i> 7 <i>d.</i> ; Carriage, 4 <i>l.</i> 15 <i>s.</i> 11 <i>d.</i> ; Butter Tests, 16 <i>l.</i> 17 <i>s.</i> 8 <i>d.</i> ; Engine, 6 <i>l.</i> 17 <i>s.</i> 11 <i>d.</i> ; Fuel, 1 <i>l.</i> 3 <i>s.</i> 8 <i>d.</i> ; Cheese and Butter Boxes, 5 <i>l.</i> 4 <i>s.</i> 3 <i>d.</i> ; Milk Analysis, 12 <i>l.</i> 12 <i>s.</i> 5 <i>d.</i> ; Lodgings, 6 <i>l.</i> 1 <i>s.</i> 8 <i>d.</i> ; Refreshments, 6 <i>l.</i> 0 <i>s.</i> 2 <i>d.</i> ; Purchase of Cheese, 10 <i>l.</i> 7 <i>s.</i> ; Miscellaneous Payments, 8 <i>l.</i> 4 <i>s.</i> 10 <i>d.</i> ; Labour, 13 <i>l.</i> 12 <i>s.</i> 8 <i>d.</i>	467	8	3			
<i>Poultry:—</i> Superintendent and Assistant, 16 <i>l.</i> 17 <i>s.</i> 8 <i>d.</i> ; Penning and Feeding, &c., 25 <i>l.</i> 18 <i>s.</i> 9 <i>d.</i> ; Labour, 18 <i>l.</i> 13 <i>s.</i> ; Carriage, 10 <i>l.</i> 7 <i>s.</i>	71	14	0			
<i>Horse-shoeing:—</i> Hire of Forges, 21 <i>l.</i> 2 <i>s.</i> 8 <i>d.</i> ; Gratuities, 10 <i>l.</i> 17 <i>s.</i> 6 <i>d.</i> ; Wages, 7 <i>l.</i> 1 <i>s.</i> 4 <i>d.</i> ; Hire of Hacks, 17 <i>l.</i> 15 <i>s.</i> ; Refreshments, 14 <i>s.</i> 4 <i>d.</i>	40	10	8			
<i>Produce:—</i> Analyses of Cider	22	7	8			
				639	13	1
Farm Prize Competition:— Expenses of Judging Farms				305	9	8
Horticulture:— Hire of Tents, 240 <i>l.</i> 18 <i>s.</i> 4 <i>d.</i> ; Judges, 23 <i>l.</i> 19 <i>s.</i> 10 <i>d.</i> ; Wages, 81 <i>l.</i> 6 <i>s.</i> 2 <i>d.</i> ; Carriage, 43 <i>l.</i> 16 <i>s.</i> 8 <i>d.</i> ; Medals, 19 <i>l.</i> 13 <i>s.</i> 11 <i>d.</i> ; Printing, 12 <i>l.</i> ; Miscellaneous, 14 <i>l.</i> 6 <i>s.</i> 6 <i>d.</i>	436	1	5			
(For Admissions see Miscellaneous Receipts.)						
Plantations Competition.				100	0	0
GENERAL SHOWYARD EXPENSES:—						
Bands	176	0	0			
Official Luncheons	64	1	4			
Ambulance	42	0	0			
Telephone Extension	94	15	0			
Telegraph Extension	115	0	0			
Hire of Chairs	51	17	3			
Plans of Showyard	14	0	0			
Hire of Furniture	83	8	0			
Education and Forestry	72	6	7			
Billposting in Showyard	10	12	0			
Fuel	8	4	0			
Medals	1	10	0			
Fencing	48	11	8			
Carriage	10	0	0			
Sleepers	5	19	6			
Hire of Weighbridge	9	1	8			
Tan	3	8	9			
Judges' Shelter	4	4	6			
Miscellaneous	35	16	11			
				850	15	2
Outstanding Accounts from Doncaster Show				23	15	1
				31,997	4	8
Credit Balance				3,115	1	7
				334,712	4	0

£334,650

Actual profit to the Society on the Bristol Show	£3,115	1	7
Contribution from Ordinary Funds of the Society to the Show Fund	2,500	0	0
Balance carried to Reserve Fund	£3,618		

BRISTOL SHOW, 1913.

Statement showing the distribution of the Prizes awarded in the several sections of the Bristol Show, with comparative figures of the Doncaster Show, 1912.

Corresponding figures for 1912.	STATEMENT OF PRIZES AWARDED:—		
£		£	s. d.
3,240	Horses	2,931	0 0
—	Cattle	2,709	0 0
—	Sheep	1,765	10 0
—	Pigs	717	15 0
386	Poultry	416	0 6
115	Cheese and Butter	125	0 0
39	Cider and Perry	49	0 0
30	Wool	64	0 0
24	Bread	—	
46	Horse-shoeing	57	0 0
35	Butter-making	93	10 0
485	Farms	500	0 0
247	Horticulture	250	0 0
40	Contribution to Bee Department	40	0 0
4,687		9,740	15 6
502	Less:—Prizes given by various Societies, &c.	2,278	5 6
1,891	Prizes given by Bristol Local Committee	1,940	0 0
2,893		4,218	5 6
2,294		£5,522	10 0

[Copies of the full Report of any of the Council Meetings held during the year 1913 may be obtained on application to the Secretary, at 16 Bedford Square, London, W.C.]

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Minutes of the Council.

WEDNESDAY, FEBRUARY 5, 1913.

At a Monthly Council held at 16 Bedford Square, London, W.C., the Earl of NORTHBROOK (President) in the Chair :—

Present:—Trustees.—Sir J. B. Bowen-Jones, Bart., the Duke of Devonshire, Lord Middleton, Lord Moreton.

Vice-Presidents.—Mr. C. R. W. Adeane, Sir Richard P. Cooper, Bart., Mr. Percy Crutchley, Mr. J. Marshall Dugdale, the Right Hon. Sir A. E. Fellowes, K.C.V.O., Mr. R. M. Greaves, Sir Gilbert Greenall, Bart., C.V.O.

Other Members of the Council.—Mr. D. T. Alexander, Mr. T. L. Aveling, Mr. Henry Dent Brocklehurst, Mr. Davis Brown, Mr. Richardson Carr, the Hon. J. E. Cross, Mr. John Evens, Mr. James Falconer, Mr. Howard Frank, Mr. W. T. Garne, Lord Harlech, Mr. Joseph Harris, Lord Hastings, Sir A. G. Hazlerigg, Bart., Mr. Arthur Hiscock, Mr. R. W. Hobbs, Mr. W. F. Ingram, Mr. G. R. Lane-Fox, M.P., Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. C. Middleton, Mr. G. Norris Midwood, Mr. T. H. Miller, Mr. John Myatt, Mr. R. G. Patterson, Mr. A. W. Perkin, Mr. C. M. S. Pilkington, Mr. H. F. Plumptre, Mr. W. A. Prout, Mr. G. G. Rea, Mr. F. Reynard, the Duke of Richmond and Gordon, K.G., Mr. Fred Smith, Mr. H. H. Smith, Lord Strachie, Mr. C. W. Tindall, Mr. A. P. Turner, and Mr. E. V. V. Wheeler.

Governor.—Mr. Harold Swithinbank.

The following Members of the Bristol Local Committee attended the meeting of the General Bristol Committee:—The Lord Mayor of Bristol, Mr. Peter Addie, Alderman C. A. Hayes, Mr. Sidney Humphries, Mr. H. L. Risuley, Mr. Eldred G. F. Walker, and Mr. George Nichols (Hon. Local Secretary). Mr. Samuel Kidner attended the Council.

In occupying the Chair for the first time, the Earl of NORTHBROOK assured the Council that he was very sensible of the honour the Members had done him in electing him President for the year. He would do his best to prove himself worthy of the confidence that had been expressed in him, and he hoped that with the kind indulgence and support of the Council, he might succeed in carrying out his duties during his year of office in an efficient and satisfactory manner.

His LORDSHIP then reported to the Council that he had received a letter from Lord Stamfordham stating that His Majesty the King would visit the Bristol Show on Friday, July 4. (Applause.) This further proof of the interest which His Majesty had so constantly shown in the welfare of the Society would, he knew, be most highly appreciated by the Council and also by every Member of the Society. He might say that, in acknowledging the receipt of the letter to Lord Stamfordham, he asked him to be so good as to convey to the King their respectful and humble thanks for the honour which His Majesty proposed to confer on the Society by visiting the Show at Bristol in July.

The PRESIDENT said he was sure Members of the Council would be sorry to learn that since the last meeting the Society had lost a very good friend in

Mr. Charles D. Nicholson, of Stainton Manor, Rotherham. As the Council were aware, Mr. Nicholson undertook the office of Steward of Forage at the Doncaster Show, and in the discharge of his duties he was most active and did everything possible in the interest of the Society and also of the livestock exhibitors. The unfortunate withholding of the exhibition of cattle, sheep, and pigs, entailed considerable trouble on the Steward, but, in spite of it all, Mr. Nicholson carried through the work in the most satisfactory manner. He would also be remembered for his kindness in lending the Society the necessary land for the trials of drills last spring, and for his generous hospitality and assistance to all the officials who attended the trials. The Council would, his Lordship was sure, desire to convey to Mrs. Nicholson the sense of their sympathy with her in the bereavement that she and her family had sustained.

The minutes of the last meeting of the Council held on December 11, 1912, were taken as read and approved.

Mr. W. M. Cazalet, Fairlawne, Tonbridge, Mr. Walter Wm. Chapman, Norfolk Street, Strand, W.C., Sir William L. Parker, Bart., Blackbrook House, Fareham, and Mr. Bertiam Abel Smith, The Bank, Nottingham, were elected Governors, and seventy-six duly nominated candidates were elected Members of the Society.

The Report of the Finance Committee was received and adopted; and Mr. ADEANE (Chairman) presented the Accounts and Balance Sheet for 1912, together with the Estimate of Receipts and Expenditure for 1913, which were approved.

Mr. WHEELER, in presenting the Botanical Committee's Report, said that, although it was rather late in the year to offer prizes for tobacco, in view of the fact that a promise was made last year by the Journal Committee, and confirmed by the Council, to offer prizes, it had been thought well to make a start. The wording would have to be amplified later, the idea of the Committee being that there should be an exhibit of tobacco in the state in which it left the grower's hands, and for this purpose they recommended the offer of a Silver Medal and a Bronze Medal at the Bristol Show for the best Exhibits of Tobacco grown in Great Britain and Ireland.

The Report of the Veterinary Committee was received and adopted; and on the motion of Sir AILWYN FELLOWES, seconded by Mr. ALFRED MANSELL, it was resolved:—

"That the President of the Board of Agriculture be asked to approach the various Colonial and Foreign Governments, with a view to a modification of the existing import regulations so as to allow cattle, sheep, and pigs, to be exported from Great Britain, provided they have come from a clean zone, and not from within a radius of thirty miles of any place where foot-and-mouth disease has existed for two months."

Mr. GREAVES, in presenting the Report of the Implement Committee, said that although the large increase in the number of entries for the Trials of Milking Machines (of which there were seventeen) over what they estimated would entail considerable extra cost, it showed the amount of interest taken in these machines, and that the Society had taken a wise step in instituting the trials.

The Report of the Committee of Selection was received and adopted; and at this point the PRESIDENT welcomed Mr. A. W. Perkin and Mr. John Evans, the two new Members of the Council who were present there that day for the first time.

Mr. MATHEWS read a letter received that morning from the Kent or Romney Marsh Sheep Breeders' Association. The Council regret, however, that it is not possible to comply with a request contained in that letter, that exhibitors in the special class for Kent Wool should be allowed to make more than one entry in that class. In the event of any exhibitor desiring to make two entries of Kent Wool, it would be possible for him to make one entry in the open class for Any Long Wool and one in the special class for Kent Wool.

The Council then adjourned until Wednesday, March 5, 1913.

WEDNESDAY, FEBRUARY 12, 1913.

A Special Meeting of the Council, convened by the President, was held at 16 Bedford Square, London, W.C., for the purpose of appointing representatives to attend a Deputation to the President of the Board of Agriculture in support of the resolution passed by the Council at their meeting on February 5. The Earl of NORTHBROOK (President) occupied the Chair.

The notice of the meeting having been read, it was formally resolved, on the motion of Lord MORETON, seconded by Mr. ERNEST MATHEWS.

"That the Royal Agricultural Society of England appoint delegates to attend, with representatives of the National Cattle, Sheep, and Pig Breeders' Associations, a Deputation to the President of the Board of Agriculture in support of the resolution passed by the Council on the 5th February."

Lord NORTHBROOK (President), Lord MORETON, Mr. MATHEWS, Mr. MAY and Mr. PERKIN kindly undertook to attend the deputation as the Society's delegates.

The arrangements for the deputation were left in the hands of the Secretary and Mr. W. W. Chapman (Secretary of the National Cattle and Sheep Breeders' Association).

WEDNESDAY, MARCH 5, 1913.

At a Monthly Council held at 16 Bedford Square, London, W.C., the Earl of NORTHBROOK (President) in the Chair:—

Present:—*Trustees*.—Sir J. B. Bowen-Jones, Bart., Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. R. W. Adeane, Mr. Percy Crutchley, the Right Hon. Sir A. E. Fellowes, K.C.V.O., Mr. R. M. Graves, Sir Gilbert Greenall, Bart., C.V.O.

Other Members of the Council.—Mr. T. L. Aveling, Mr. E. W. Betts, Mr. Henry Dent Brocklehurst, Mr. Richardson Carr, the Hon. J. E. Cross, Mr. A. E. Evans, Mr. John Evans, Mr. James Falconer, Mr. Howard Frank, Lord Harlech, Mr. Joseph Harris, Mr. W. Harrison, Lord Hastings, Sir A. G. Hazlerigg, Bart., Mr. J. H. Hine, Mr. R. W. Hobbs, Mr. John Howard Howard, Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. C. Middleton, Mr. T. H. Miller, Mr. Henry Overman, Mr. R. G. Patterson, Mr. A. W. Perkin, Mr. W. A. Prout, Mr. F. Reynard, Mr. C. Colman Rogers, Mr. John Rowell, Mr. E. W. Stanyforth, Mr. A. P. Turner, Mr. E. V. V. Wheeler, and Mr. Louis C. Wrigley.

The following Members of the Bristol Local Committee attended the meeting of the General Bristol Committee:—The Lord Mayor of Bristol, Sir Frank Wills, Alderman C. A. Hayes, Mr. H. L. Riseley, Mr. Eldred G. F. Walker, and Mr. George Nichols (Hon. Local Secretary).

The minutes of the last ordinary meeting of the Council held on February 5, and of the Special Council held on February 12, 1913, were taken as read and approved.

The PRESIDENT explained that he had called the Special Council on February 12 for the purpose of appointing representatives of the Society to attend a deputation to the President of the Board of Agriculture in support of the resolution passed at the meeting on February 5. At that time they expected that the President of the Board would have been able to receive the deputation at an early date, but owing to the unexpected adjournment of the House of Commons last month arrangements could not be made. Mr. Runciman was, however, going to receive them on March 11.

Seventy-four duly nominated candidates were elected Members of the Society.

The seal of the Society was ordered to be affixed to an agreement with Messrs. John Unite, Ltd., extending their contract for the supply of canvas in the Showyard.

Other business having been transacted, the Council adjourned until Wednesday, April 2, 1913.

WEDNESDAY, APRIL 2, 1913.

At a Monthly Council held at 16 Bedford Square, London, W.C., the Right Hon. Sir AILWYN E. FELLOWES, K.C.V.O. (Vice-President) in the Chair:—

Present:—Trustees.—Sir J. B. Bowen-Jones, Bart., Sir John H. Thorold, Bart.
Vice-Presidents.—Mr. Percy Crutchley, Sir Gilbert Greenall, Bart., C.V.O.

Other Members of the Council.—Mr. T. L. Aveling, Mr. Henry Dent Brocklehurst, Mr. Davis Brown, Mr. Richardson Carr, the Hon. J. E. Cross, Mr. John Even, Mr. Howard Frank, Major H. G. Henderson, M.P., Mr. R. W. Hobbs, Mr. John Howard Howard, Mr. Ernest Mathews, Mr. W. A. May, Mr. C. Middleton, Mr. T. H. Miller, Mr. John Myatt, Mr. W. Nocton, Mr. R. G. Patter-on, Mr. C. M. S. Pilkington, Mr. G. G. Rea, Mr. F. Reynard, the Duke of Richmond and Gordon, K.G., Mr. C. Coltman Rogers, Mr. John Rowell, Mr. Fred Smith, Mr. E. W. Stanyforth, Lord Strachie, Mr. C. W. Tindall, Mr. C. W. Wilson, and Mr. Louis C. Wrigley.

Governor.—Mr. W. W. Chapman.

The following Members of the Bristol Local Committee were also present:—The Lord Mayor of Bristol, Sir Frank Wills, Mr. Samuel Kidner, Mr. H. L. Risley, and Mr. George Nichols (Hon. Local Secretary).

In the unavoidable absence of the President (the Earl of Northbrook), Sir AILWYN E. FELLOWES was called to the Chair.

The CHAIRMAN said that before commencing the proceedings that morning, he was sure Members of Council would desire him to refer to the sad bereavement that had befallen the Royal Family by the death of His Majesty King George of Greece. The King of Greece was uncle to His Majesty the King, and was also the beloved brother of Her Majesty Queen Alexandra, and he was sure the Council would desire to place on record the sense of their deep sorrow for the death of King George of Greece, and to express their respectful sympathy with Their Majesties the King and Queen, and with Her Majesty Queen Alexandra, in the melancholy circumstances which had caused such universal sorrow.

The minutes of the last meeting of the Council, held on March 5, 1913, were taken as read and approved.

Sixty-one duly nominated candidates were elected Members.

In presenting the Report of the Chemical and Woburn Committee, Sir J. B. BOWEN-JONES referred to a matter in the Report that had given a great deal of satisfaction to the Committee. This was that the work of the Woburn Experimental Farm had been so far recognised by the Board of Agriculture that they had given a grant of £3007. for the financial year just concluded in respect of the research work carried on at the farm. In addition, the Board had made an interim grant of £3007. for the past year in respect of the general experimental work of the Woburn farm. He trusted that this was but an indication of further assistance coming in the future, and that the work of the Woburn Experimental Station would not only be maintained in its present efficiency, but also that it would be possible to extend its activity in much-needed directions. Another matter he would allude to was the calf rearing experiment conducted at the Woburn farm in 1912. It had been decided to issue in pamphlet form a report on this experiment for distribution to the Members of the Society. There had been very great interest taken in this experiment, and it was the intention of the Committee to institute further experiments at a later date.

Sir AILWYN FELLOWES, in presenting the Report of the Veterinary Committee, made reference to the deputation sent by their Society, the National Cattle Breeders' Association, the National Sheep Breeders' Association, and the National Pig Breeders' Association, to interview Mr. Runciman as to the regulations regarding the importation of cattle, sheep, and pigs by foreign countries. On behalf of the Society's representatives he desired to report that they received a most sympathetic reply from Mr. Runciman, and they fully realised that he was quite cognisant of the importance of the subject, and that

he and the Board were doing everything they could to meet the wishes of the livestock owners of the country.

Mr. ERNEST MATHEWS, Chairman of the Milking Machine Trials Subcommittee, reported the arrangements which had been made for carrying out the trials at Grange Hill, Bishop Auckland, commencing on Friday, April 18.

The Seal of the Society was affixed to a document authorising the payment direct to the Society's bankers of interest on investments.

The Council adjourned until Wednesday, May 7, 1913.

WEDNESDAY, MAY 7, 1913.

At a Monthly Council held at 16 Bedford Square, London, W.C., the Earl of NORTHBROOK (President) in the Chair :—

Present:—Trustees.—Sir J. B. Bowen-Jones, Bart., Lord Moreton, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. Adeane, Sir Richard P. Cooper, Bart., Mr. Percy Crutchley, Mr. J. Marshall Dugdale, Mr. R. M. Greaves, Sir Gilbert Greenall, Bart., C.V.O.

Other Members of the Council.—Mr. T. L. Aveling, Capt. Clive Behrens, Mr. Henry Dent Brocklehurst, Maj.-Gen. J. F. Brocklehurst, C.V.O. C.B., Mr. Davis Brown, Mr. Richardson Carr, the Hon. J. E. Cross, Mr. John Evans, Mr. James Falconer, Mr. Howard Frank, Mr. W. T. Garne, Mr. James W. Glover, Mr. Joseph Harris, Lord Hastings, Sir Arthur G. Hazlerigg, Bart., Mr. Arthur Hiscock, Mr. R. W. Hobbs, Mr. W. J. Hosken, Mr. W. F. Ingram, Sir Charles V. Knightley, Bart., Mr. G. R. Lane-Fox, M.P., Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. C. Middleton, Mr. John Myatt, Mr. H. Overman, Mr. R. G. Patterson, Mr. C. M. S. Pilkington, Mr. H. F. Plumptre, Mr. W. A. Prout, Mr. F. Reynard, Mr. C. Colman Rogers, Mr. H. H. Smith, Mr. E. W. Stanyforth, Lord Strachie, Mr. C. W. Tindall, Mr. A. P. Turner, and Mr. Louis C. Wrigley.

Governors.—Mr. W. W. Chapman and Mr. Beville Stanier, M.P.

The following Members of the Bristol Local Committee were also present :—The Lord Mayor of Bristol, Sir Frank Wills, Alderman C. A. Hayes, Mr. Sidney Humphries, Mr. Samuel Kidner, Mr. H. L. Riseley, and Mr. Eldred G. F. Walker.

The PRESIDENT, in opening the meeting, read two letters which had been received in answer to the votes of condolence passed by the Council at their last meeting on the death of His Majesty the King of the Hellenes :—

Home Office, Whitehall,
April 16th, 1913.

SIR,—I am directed by the Secretary of State to inform you that the message of condolence from the Council of the Royal Agricultural Society of England on the death of his late Majesty the King of the Hellenes has been laid before His Majesty, who was pleased to receive the same very graciously.

I am, Sir,
Your obedient Servant,
(Signed) A. J. EAGLESTON.

THOMAS MCBOW, Esq.,
Secretary, Royal Agricultural
Society of England.

Marlborough House,
April 4th, 1913.

SIR,—Your letter of the 3rd instant, recording as it does the sorrow of the Royal Agricultural Society of England for the death of the King of Greece, and their deep sympathy with Queen Alexandra in the melancholy circumstances of Her Majesty's beloved brother's death, has been submitted to Her Majesty.

I write now by the Queen's Command to ask you to convey to the President of the Society, and request him to let it be known to all its Members, how very much

Her Majesty values such kind words of condolence with her in her great grief, coming as they do from so large and influential a body as the Royal Agricultural Society of England.

I have the honour to be, Sir,
Your obedient Servant,
(Signed) D. M. PROBYN, General,
Comptroller to Her Majesty
Queen Alexandra.

The SECRETARY,
Royal Agricultural Society
of England.

Before proceeding with the ordinary business, the PRESIDENT reported officially the death, at the age of eighty-four, of Mr. Joseph Martin, of Littleport, Ely, who had been a Member of that Council for upwards of thirty years, having been elected to it so far back as 1874. Many of those present would remember him as a colleague and fellow-worker in the interests of agriculture, with which industry he had been connected all his life. Since his resignation from the Council in 1903, Mr. Martin had maintained his interests in the Society, and had been a regular attendant at the General Meetings of Members, on which occasions he had been frequently a speaker.

Those Members of the Council who knew Mr. Martin would feel great regret at hearing of his death, and it would be the general wish of the Council that he, as President, should convey an expression of this to the members of the family.

The minutes of the last meeting of the Council, held on April 2, 1913, were taken as read and approved.

Mr. John Capel Hanbury, of Pontypool Park, Monmouthshire, and Mr. E. Page, of Warren Hall, Broughton, Chester, were elected Governors, and seventy duly nominated candidates were elected Members.

Mr. ROGERS, in presenting the Report of the Botanical and Zoological Committee, referred to the deputation who went to the Board of Agriculture on the previous day upon the question of the establishment of a Seed Control Station, and stated that Mr. Runciman had said he would consider the matter.

In presenting the Report of the Veterinary Committee, which was received and adopted, Lord NORTHBROOK called the attention of the Council to the offer of the Royal Veterinary College to assist the Members in cases of outbreaks of abortion, which he hoped might prove an important step in dealing with the question. Sir John McFadyean had informed the Committee that, as the result of experiments which had been carried out during the past few years, the presence of contagious abortion in cattle can be discovered by testing the blood of the animal, and that, in his opinion, this test was completely reliable. What the Royal Veterinary College were offering to Members of the Society was this, that when a case of abortion occurs in cattle, the Member may give notice to the College, who will carry out a test of the blood. If that test shows that the animal is not suffering from contagious abortion, well and good, and the mind of the owner is relieved of any anxiety. If, on the other hand, it be shown that the animal is infected with contagious abortion, the College will test the blood of the other animals on the farm to discover how many of those are infected, and they will then advise the owner as to the method in which they should be dealt with, how they should be treated, and the best steps that should be taken for freeing the herd from disease. This they are prepared to do free of cost, and to treat as many cases as they are able to deal with. Sir John McFadyean thinks they will be able to undertake cases that are sent to approximately the number of 100. The only expense which the owner will incur will be the cost of taking a sample of blood and sending that sample to the Royal Veterinary College. Sir John McFadyean wishes to make two conditions, one that the sample of blood shall be taken and shall be transmitted to the College by a qualified veterinary surgeon and the other is that the owner shall, so far as he is able, carry out the advice given him by the Veterinary College. The Council would wish to thank Sir John McFadyean and the Royal Veterinary College for the offer, which, he thought, they would agree was a generous one, and he hoped might prove to be of great advantage to Members of the Society.

Mr. KIDNER, referring to the report on outbreaks of animal diseases, suggested for the consideration of the Veterinary Committee that the time had now arrived when some representation should be made to the Board of Agriculture with a view to the complete eradication of sheep scab from this country.

Mr. PATTERSON thought that, in view of the very great importance of calf rearing at the present moment, it might be a very considerable advantage if the Veterinary Committee would also endeavour to discover some remedy for white scour. He knew many calf rearers in his own neighbourhood who had suffered very serious losses from this disease, and who had now practically given up the attempt to rear calves.

The PRESIDENT undertook, on behalf of the Veterinary Committee that both these suggestions should receive consideration.

Sir JOHN THOROLD, in moving the adoption of the Report of the Committee of Selection, said that the Hon. James Wilson, who the Committee suggested should be made an Honorary Member of the Society, was for sixteen years Minister of Agriculture at Washington, and had brought that department up to great perfection. Mr. Wilson was to be made an Honorary Member of the Highland and Agricultural Society of Scotland, and the Committee of Selection thought it would be a graceful act if the Royal Agricultural Society conferred its Honorary Membership on Mr. Wilson at the time of the Bristol Show.

On behalf of the Milking Machine Trials Sub-Committee, Mr. ERNEST MATHEWS reported that the First Prize (Gold Medal and 25*l.*) had been awarded to Mjolkningsmaskin Omega, Flen, Sweden, and the Second Prize (Silver Medal and 10*l.*) to Messrs. Vaccar, Ltd., 7 Denman Street, London, E.C. In moving the adoption of this report, Mr. MATHEWS explained the procedure adopted at the trials and then formally moved the following resolutions, which were seconded by the Hon. J. E. CROSS and carried unanimously.

1. That the best thanks of the Society are due and are hereby tendered to Messrs. Bolckow, Vaughan and Company for allowing the trials to be carried out on their farms, and especially for permitting their cows to be used, without any restrictions, for the various types of milking machines, which was a most generous action, considering that the machines came, not only from this country, but also from the Colonies and abroad.
2. That the Society desire to place on record their gratitude to Mr. W. Burkitt, the manager of Messrs. Bolckow, Vaughan and Company's farms, who undertook and carried out successfully the difficult task of dividing the cows into groups yielding similar quantities of milk, arranged the fitting up of the sheds to suit the various types of machinery, and generally did everything that was necessary for the proper carrying out of these important trials. They also desire to express their most cordial thanks to Mrs. Burkitt for the very kind and hospitable way in which she entertained all the officials connected with the trials.
3. That the best thanks of the Society be accorded to the University College, Reading, for the arrangements they were so good as to make for carrying out the bacteriological examinations in connection with the trials.
4. That the best thanks of the Society are due and are hereby tendered to Mr. John Golding, F.I.C., F.O.S.; Dr. R. Stenhouse Williams, M.B., O.M., B.Sc., D.Ph.; and Mr. James Mackintosh, N.D.A. (Hons.), N.D.D. of the University College, Reading, for their invaluable work in connection with the bacteriological examinations of the milks in the trials.
5. That the best thanks of the Society are due and are hereby tendered to the judges, Mr. Bayntun Hippisley and Mr. James Sadler, for their services as judges in the Milking Machine trials held at Grange Hill, Bishop Auckland, in April last.

On the motion of Mr. CROSS, seconded by Mr. GREAVES, the Council expressed their hearty thanks to Mr. Mathews for the great assistance he had rendered in connection with the Milking Machine trials.

The SECRETARY announced that the Trustees of the "Queen Victoria Gifts" Fund had decided to make a grant to the Royal Agricultural Benevolent Institution of 140*l.* for the year 1913, to be distributed as fourteen grants of 10*l.* each to the five male candidates, five married couples, and four female

candidates who polled the largest number of votes in their class, and who would not this year receive grants from any other fund in connection with the Royal Agricultural Benevolent Institution.

The SECRETARY read a letter from the Meteorological Office stating that it was proposed to issue during the forthcoming harvest daily telegraphic forecasts of the weather to anyone desirous of receiving them upon payment of the cost of the telegrams.

Other business having been transacted, the Council adjourned until Wednesday, June 4, 1913.

WEDNESDAY, JUNE 4, 1913.

At a Monthly Council held at 16 Bedford Square, London, W.C., the Earl of NORTHBROOK (President) in the chair :—

Present :—Trustees.—Sir J. B. Bowen-Jones, Bart., Mr. F. S. W. Cornwallis, the Earl of Coventry, the Duke of Devonshire, G.C.V.O., Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. Adeane, Sir Richard P. Cooper, Bart., Mr. Percy Crutchley, Mr. J. Marshall Dugdale, the Right Hon. Sir Ailwyn E. Fellowes, K.C.V.O., Sir Gilbert Greenall, Bart., C.V.O., the Hon. Cecil T. Parker, the Earl of Yarborough.

Other Members of the Council.—Capt. Olive Behrens, Mr. E. W. Betts, Mr. Henry Dent Brocklehurst, Maj.-Gen. J. F. Brocklehurst, C.V.O., C.B., Mr. Davis Brown, Mr. J. T. C. Eadie, Mr. Arthur E. Evans, Mr. James Falconer, Lord Harlech, Mr. Joseph Harris, Mr. W. Harrison, Lord Hastings, Sir Arthur G. Hazlerigg, Bart., Mr. J. H. Hine, Mr. Arthur Hiscock, Mr. W. F. Ingram, Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. C. Middleton, Mr. G. Norris Midwood, Mr. W. Nocton, Mr. R. G. Patterson, Mr. H. F. Plumptre, Mr. F. Reynard, the Duke of Richmond and Gordon, K.G., Mr. C. Coltman Rogers, Mr. John Rowell, Mr. H. H. Smith, Mr. C. W. Tindall, Mr. E. V. V. Wheeler, and Mr. Louis C. Wrigley.

Governor.—Mr. Beville Stanier, M.P.

The following Members of the Bristol Local Committee were also present :—The Lord Mayor of Bristol, Sir Frank Wills, Mr. Peter Addie, Alderman C. A. Hayes, Mr. Sidney Humphries, Mr. Samuel Kidner, Mr. H. L. Riseley, Mr. E. J. Taylor (Town Clerk), Mr. Eldred G. F. Walker, Mr. H. W. Seccombe Wills, and Mr. George Nichols (Hon. Local Secretary).

At the commencement of the proceedings, the PRESIDENT read a letter which had been received from Mr. Heber Martin, expressing, on behalf of himself and his brothers and sisters, their thanks for the expression of the Council's regret at the death of Mr. Joseph Martin.

The minutes of the last meeting of the Council, held on May 7, 1913, were taken as read and approved.

Major P. G. Shewell, The Mount, Cleve Hill, Glos., was elected a Governor, and ninety-five duly nominated candidates were elected Members.

SIR JOHN THOROLD, in presenting the Report of the Committee of Selection, formally moved "That the name of the Earl of Powis be suggested to the Annual General Meeting of Governors and Members in December for election as President for 1914." The Earl of Powis, he said, had been a Member of the Society since 1887, had become a Governor in 1891, and one of his predecessors had been President in the years 1860-1. The Committee felt sure that his Lordship's great interest in the district in which next year's Show would be held would make him a most excellent President.

Sir J. B. BOWEN-JONES had great pleasure in seconding the nomination, and stated that Lord Powis' family had been very closely connected with the Society from the time of its formation, his great-uncle, the Hon. Robert Olive, having been one of the signatories to the petition to the Crown for the Charter of Incorporation. Mr. Olive had acted on the Council for some years, but died

before passing the chair. One of his Lordship's predecessors had been a Member of the Council for many years, and he had also occupied the position of Chairman of the Education Committee. The present Earl was Lord-Lieutenant of Salop; he took the very deepest interest in the work of the Society, and had also been a very successful exhibitor at the Shows. His Lordship was a large landowner in Montgomeryshire and in Shropshire, and he farmed an estate within half-a-dozen miles of Shrewsbury. He had taken a very active part in connection with the Society's forthcoming visit to Shrewsbury, being chairman of the Executive Committee, and he (Sir Bowen) felt sure that under his Lordship's Presidency they would hold a show next year that would be worthy of that great Society and a credit to the ancient borough of Shrewsbury and the county of Salop.

The motion was then put to the meeting and carried unanimously.

Authority was given for the Seal of the Society to be affixed to the Diploma of Honorary Membership of the Hon. James Wilson, ex-Minister of Agriculture at Washington, U.S.A.

Other business having been transacted, the Council adjourned until the week of the Bristol Show.

WEDNESDAY, JULY 2, 1913.

At a Monthly Council held in the Showyard at Bristol, the Earl of NORTHBROOK (President) in the Chair:—

Present:—Trustees.—Sir J. B. Bowen-Jones, Bart., Mr. F. S. W. Cornwallis, the Duke of Devonshire, G.C.V.O., Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. R. W. Adeane, Sir Richard P. Cooper, Bart., Mr. Percy Crutchley, Mr. J. Marshall Dugdale, the Right Hon. Sir Ailwyn E. Fellowes, K.C.V.O., Mr. R. M. Greaves, Sir Gilbert Greenall, Bart., C.V.O., the Hon. Cecil T. Parker.

Other Members of the Council.—Mr. D. T. Alexander, Mr. T. L. Aveling, Captain (live Behrens, Mr. T. A. Buttar, Mr. R. G. Carden, Mr. Richardson Carr, the Hon. J. E. Cross, Mr. J. T. C. Eadie, Mr. John Evens, Mr. J. Falconer, Mr. W. T. Garne, Mr. J. W. Glover, Lord Harlech, Mr. Joseph Harris, Mr. W. Harrison, Lord Hastings, Sir Arthur G. Hazlerigg, Bart., Mr. J. H. Hine, Mr. Arthur Hiscock, Mr. R. W. Hobbs, Mr. W. J. Hosken, Mr. J. Howard Howard, Mr. W. F. Ingram, Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. C. Middleton, Mr. G. Norris Midwood, Mr. John Myatt, Mr. William Nocton, Mr. Henry Overman, Mr. R. G. Pattison, Mr. C. M. S. Pilkington, Mr. H. F. Plumptre, Mr. F. Reynard, Mr. C. C. Rogers, Mr. John Rowell, Mr. Fred Smith, Mr. E. W. Stanyforth, Lord Strachie, Mr. C. W. Tindall, Mr. A. P. Turner, Mr. E. V. V. Wheeler, Mr. C. W. Wilson, and Mr. Louis C. Wrigley.

The minutes of the last monthly meeting of the Council, held on June 4, were taken as read and approved.

It was resolved, on the motion of Sir GILBERT GREENALL, Bart., C.V.O., "That the best thanks of the Society are due and are hereby tendered to:—

1. The Officials of the General Post Office for the efficient postal and telegraphic arrangements.
2. The Chief Commissioner of Police for the efficient service rendered by the detachment of Metropolitan Police on duty in the Showyard.
3. The Chief Constable of Bristol for the efficient police arrangements in connection with the Show.
4. The Bristol St. John Ambulance Brigade for the efficient Ambulance arrangements.
5. Messrs. Farris Bank, Ltd., Bristol, for the efficient services rendered by their officials.
6. Messrs. Merryweather & Sons, Ltd., for the provision of Fire Engines and for the efficient arrangements in connection with the Fire Station in the Showyard.
7. Messrs. P. E. Gane, Ltd., for decorating and furnishing the Royal Pavilion.

- 6 Messrs. Parker & Son (Bristol), Ltd., for providing the Floral Decorations near the Pavilions, &c.
 9. Messrs. Ruston, Proctor & Co., Ltd., for the loan of a Steam Engine for supplying Motive Power to the Dairy."

Other business having been transacted, the Council adjourned until Wednesday, July 30, 1913, at 16 Bedford Square, London, W.C.

Proceedings at General Meeting of Governors and Members,

HELD IN THE
LARGE TENT IN THE SHOWYARD AT BRISTOL,

WEDNESDAY, JULY 2, 1913.

THE EARL OF NORTHBROOK (PRESIDENT) IN THE CHAIR.

The meeting was largely attended, amongst those present being the Duke of Devonshire, G.C.V.O., Lord Harlech, Lord Hastings, Lord Strachie, the Right Hon. Sir Ailwyn E. Fellowes, K.C.V.O., the Hon. J. E. Cross, the Hon. Cecil T. Parker, the Hon. James Wilson, Sir J. B. Bowen-Jones, Bart., Sir Richard P. Cooper, Bart., Sir Gilbert Greenall, Bart., C.V.O., Sir Arthur Hazlerigg, Bart., Sir John H. Thorold, Bart., Mr. C. R. W. Adeane, Mr. D. T. Alexander, Mr. W. E. G. Atkinson, Capt. Clive Behrens, Mr. T. K. Brain, Mr. H. Butler, Mr. T. A. Buttar, Mr. G. Butters, Mr. B. G. Carden, Mr. W. W. Chapman, Mr. F. S. W. Cornwallis, Mr. Percy Crutchley, Mr. J. H. Dean, Mr. J. Marshall Dugdale, Mr. J. T. O. Eadie, Mr. H. J. Elwes, F.R.S., Mr. John Evans, Mr. J. Falconer, Mr. C. Fieldsend, Mr. T. F. Filgate, Mr. W. T. Garne, Mr. G. Gibbons, Mr. J. W. Glover, Mr. E. O. Greening, Mr. Joseph Harris, Mr. W. Harrison, Mr. J. H. Hine, Mr. Arthur Hiscock, Mr. R. W. Hobbs, Mr. W. J. Hosken, Mr. J. Howard Howard, Mr. W. F. Ingram, Mr. G. R. Kendle, Mr. K. J. J. Mackenzie, Mr. A. Mansell, Mr. Henry Matthews, Mr. W. A. May, Mr. C. Middleton, Mr. G. Norris Midwood, Mr. J. M. Moubray, Mr. John Myatt, Mr. W. Nocton, Mr. W. Nunnerley, Mr. C. S. Orwin, Mr. H. Overman, Mr. R. G. Patterson, Mr. C. M. S. Pilkington, Mr. H. F. Plumptre, Mr. D. Price-Powell, Mr. F. H. Price, Mr. F. Reynard, Mr. T. Rich, Mr. C. C. Rogers, Mr. John Rowell, Mr. F. Smith, Mr. H. Smith, jun., Mr. Beville Stanier, M.P., Mr. E. W. Stanyforth, Mr. George Symons, Mr. J. Herbert Taylor, Mr. C. W. Tindall, Mr. R. Topham, Mr. H. J. Tory, Mr. P. C. Tory, Mr. R. Tory, Mr. W. Tudge, Mr. A. P. Turner, Mr. C. Turner, Mr. H. H. Vivian, Mr. T. B. Ward, Professor Robert Wallace, Mr. E. V. V. Wheeler, Mr. C. W. Wilson, Mr. Louis C. Wrigley, &c., &c.

The following representatives of the Bristol Local Committee were also present:—The Lord Mayor of Bristol, Sir Frank Wills, Mr. Henry Bridgman, Mr. H. L. Risleley, Mr. Eldred G. F. Walker, and Mr. George Nichols (Hon. Local Secretary).

President's Introductory Remarks.

The PRESIDENT in the first place said he must express his pleasure at presiding that day over such a representative gathering of the Governors and Members of the Royal Agricultural Society. They congratulated themselves on meeting this year under pleasanter and more favourable conditions than prevailed at their meeting in the Showyard last year. The misfortune that befell them at Doncaster would not easily be forgotten, but they would always remember the courage and the spirit displayed by his predecessor in office, Lord Middleton—(hear, hear)—in facing what was a most trying and depressing

situation. Well, although, thanks to the loyal support they received from the inhabitants of Yorkshire, they got through their difficulties better than might have been expected, their experience showed the necessity of having a substantial reserve fund. He was glad to say they had been able to maintain that at a figure which was sufficient to meet any contingency that might arise in connection with their Show. With regard to the Show this year, the outlook was most encouraging. They had a very satisfactory attendance of those who passed through the check gate on the previous day, and what was more satisfactory they had an exceptionally large sale of season tickets. Moreover, they had been, fortunate up to now in the weather, and given a continuance of the favourable conditions during the ensuing days they might look forward, he thought, to a show memorable in the history of the Society. All would agree that they had a most beautiful site—(hear, hear)—and they were greatly indebted to the Lord Mayor and Corporation and to the Local Committee. (Hear, hear.) They were also much indebted to the inhabitants of Bristol for foregoing their access to the Downs, and it had been the care of the Society that the ground should be enclosed for as short a time as possible. He was sure they would all agree that the arrangements of the Show had been most excellently carried out by their able and energetic Honorary Director, Sir Gilbert Greenall—(hear, hear)—and that it would be the general wish of them all to express to him their hearty thanks for the invaluable services he had rendered the Society during the last seven years. (Hear, hear.) He knew also that they would desire to thank the Gloucestershire Agricultural Society for having voluntarily abandoned their show this year owing to the Royal being in Bristol. (Hear, hear.)

They had one of the finest and largest exhibitions, both in regard to implements and stock, ever held by the Society. They had excellent entries in both those departments; they had the usual large working dairy, a comprehensive exhibition of agricultural and dairy produce, and they had an extensive poultry show. They also had what he believed was a new and interesting feature in the exhibition in connection with the growing of Tobacco in this country; they had a Forestry Exhibition which had been well supported by influential gentlemen, and although the Royal Horticultural Society was holding its annual show at Holland House that week, they had succeeded in bringing together a remarkably fine Horticultural Exhibition. He was certain that it would be the wish of those present to express to Sir George Holford—whose exhibit was one of the features of that section—their hearty thanks, and also their great regret that illness prevented him being present at the Show that week.

There were many other sections to which he need not now refer, but he would like to call their attention to the exhibits from the Dominions beyond the seas. (Hear, hear.) This section owed its initiation to Bristol—(hear, hear)—and he believed it would be found to be of great interest to those who would visit the Show during the week, for it gave their Show an imperial as well as a national character. (Hear, hear.)

It was a matter for great congratulation to them all that the King, who, like his illustrious predecessors, Queen Victoria and King Edward, had honoured the Society by his patronage, had graciously promised to visit the Show on Friday. (Hear, hear.) He might remind them that His Majesty had shown his interest in a practical manner by sending a large number of live stock exhibits both from Windsor and Sandringham, and they would most respectfully wish to convey to his Majesty their congratulation on his success in taking three championships and a very large number of other prizes. (Hear, hear.)

Having said so much about the Bristol Show, he would like to remind them that their Show next year would be held at Shrewsbury, in 1915 at Nottingham, in 1916 at Manchester, in 1917 at Cardiff, and 1918 was not yet decided, but he thought they would agree that they were looking far enough ahead for the present.

There was no report from the Council to be presented on this occasion, but there was one thing that affected the welfare of the Society to which he would like to call attention. Their membership had increased during the last few years, and was now over 10,000; that was satisfactory as far as it went. He thought, however, that a National Society like theirs might hope to have an even larger number of Members. He therefore appealed to all Members of the Society to do their best and to endeavour to persuade their friends and neighbours to join the Royal Agricultural Society of England.

He did not wish to touch upon any matters that would be dealt with presently by resolutions, but as President he felt he could not sit down without expressing his sincere thanks to the Local Committee, the Executive Committee, over which the Lord Mayor had so ably presided, and to their Honorary Local Secretary, Mr. George Nichols, for the hearty co-operation and valuable assistance, so readily and constantly given, in all arrangements for the Show.

New Honorary Member.

The PRESIDENT then said he had a very pleasant duty to perform. It was to present a Diploma of Honorary Membership of the Society in recognition of his services to Agriculture to the Hon. James Wilson, ex-Minister of Agriculture at Washington, U.S.A., who had retired from an office he had held for sixteen years, and who had served under three administrations—under President McKinley, President Roosevelt, and President Taft. (Hear, hear.) He might add, his Lordship said, that Mr. Wilson had for a longer period than anyone else consecutively held office as Minister in the American Cabinet.

On behalf of the Royal Agricultural Society of England the PRESIDENT then handed the Diploma to Mr. Wilson, and expressed great pleasure at seeing him at their meeting that day.

The HON. JAMES WILSON, in reply, said he very keenly appreciated the honour his Lordship, as representing the Society, had conferred upon him. His work was in the Far West—the Western hemisphere—and during the time it had been his duty to have agriculture studied in the United States he had found that much of their work was just as valuable to their neighbour on the North, the great Dominion of Canada, as it was to their own people in the United States. It was with great pleasure that he found himself in future associated in sympathy with 10,000 Englishmen—(applause)—and if they wanted to know what was being done over in America in any direction he could assure them they were not limited in the number of their societies, appropriations or publications. They had 23 million dollars to use last year. They published and sent over the world—for they kept nothing secret—31 million “pieces,” and that Society was welcome along any line in which they were interested, to be associated with them. (Applause). He had come across, to look over old England and see what was doing in many different lines, and he would take the liberty of writing to gentlemen in different parts of the country to learn the conditions and progress of certain industries. (Hear, hear.)

Prizes for Farms.

The SECRETARY, at the request of the President, then announced the list of awards made by the judges in the Farm Prize Competition (*see pp. cxxxi. and cxxxiii.*).

Prizes for Plantations and Home Nurseries.

The SECRETARY also read the list of awards in the Plantations and Home Nurseries' Competition (*see pp. cxxxiv. and cxxxv.*).

Thanks to Lord Mayor and Corporation.

The Duke of DEVONSHIRE said he was quite sure that the resolution which he had the honour to propose would be received with the greatest possible enthusiasm. It was “That the best thanks of the Society are due and are hereby tendered to the Lord Mayor and Corporation of Bristol for their

cordial reception of the Society." He felt sure that the Lord Mayor would understand that this was no mere perfunctory vote, but a very sincere and genuine one. Not only had they in Bristol extended a most kind and cordial welcome to the Society, but they had done everything in their power to make the Show a most successful one. As the President had said, as far as they had gone everything had been most successful, and if only they were favoured with a continuance of good weather during the remainder of the week, he was quite confident that this Show would stand as one of the best the Society had ever held.

Sir J. B. BOWEN-JONES, Bart., said it afforded him great satisfaction to second the resolution proposed by the Duke of Devonshire. That meeting, those present would remember, was the third held by the Royal Agricultural Society in Bristol. Though he was considerably advanced in years, he was not old enough to attend the Show held in 1842, but he well recollected the last Meeting of the Society in that city in 1878, and the success they met with on that occasion. The Mayor of that year received them in a very cordial way, and on the present occasion they had every reason to feel that the Lord Mayor and Corporation had been equally enthusiastic in every way to promote the success of the Show. In 1878, looking at the matter simply from a financial point of view, there was a credit balance on the Show of over 1,600*l.*, and he thought that, judging from what they now saw as far as they proceeded, they would in all probability far exceed that sum when they finished their exhibition at Bristol. He begged most cordially to second the resolution.

The motion having been put to the meeting and unanimously carried,

The LORD MAYOR OF BRISTOL, who was enthusiastically received on rising, said he had to acknowledge with gratitude the cordial vote of thanks which had been passed to the Corporation and himself for the assistance they had given to the Show. He was only carrying on the succession of good work initiated by his predecessors. They were all delighted that the Show had come to Bristol, and that the weather was so favourable; they hoped the exhibitors would be satisfied with the awards. With regard to the attendance, there could be no question that at the end of the week this would be quite satisfactory, and if that was so the financial result would also be satisfactory. They realised that the Royal Agricultural Society was no ordinary concern. It was not like a company organised for the purpose of earning profits for shareholders; it had no such intention. It existed in order to carry on good educational work which was of the utmost value. They realised that the old-fashioned way of carrying on agriculture by rule of thumb did not do in these modern times; that it was necessary that science should be added to the traditions handed down from time immemorial, and that unless they could keep abreast of the best knowledge that science gave them they were likely to be out-distanced. The more they progressed in science the more need there seemed to be to apply it. New pests were continually making their appearance, and when they had discovered a way of dealing with some old enemy a new one cropped up. It seemed to him that the work was infinite. Without such institutions as the Royal Agricultural Society he was afraid the country would be overrun with pests, and agriculture could not be carried on at all. They in Bristol realised the great importance of the Society, and were proud to know that they were to have a small share in assisting its work by enabling it to have that beautiful spot for the Show, which he trusted would be successful in every way. (Applause.)

Thanks to Local Committee.

Sir GILBERT GREENALL, Bart., said it was with very great pleasure indeed that he proposed the next resolution: "That the best thanks of the Society are due and are hereby tendered to the Bristol Local Committee for their exertions to promote the success of the Show." All those connected in any way with the Society knew how the work of the Local Committee grew year by year on account of the number of "side shows," which were mostly

run by the Local Committee, and he could assure them that their work was much appreciated by the Society. The Bristol Committee had done everything in their power to make the Show a success. He was much indebted to them for the assistance they had at all times given him personally, and in moving the resolution he would like to add the names of Mr. George Nichols, the Local Honorary Secretary, and Mr. Edmund J. Taylor, the Town Clerk.

Mr. JOHN EVENS had the greatest possible pleasure in seconding this vote of thanks. Bristol had given them a hearty welcome, a good railway centre, a splendid showyard, and beautiful weather. One thing more was necessary, and that had been supplied. These conditions had been backed up by the very practical, common-sense, business-like transactions of the Local Committee.

The resolution having been agreed to,

Sir FRANK WILLS, in response, said if he was brief in his reply he begged them not to think that he was not in earnest. He was sure that all the Bristol Executive recognised that they could not have accomplished anything like what they had done had it not been for the kindly way in which the Council of the Society in London met them on every point, and more especially he might refer to Sir Gilbert Greenall, who had made things go so smoothly. (Hear, hear.) He was one of those men who always believed in the "oiled feather" which made the hinges of life work a great deal easier. He was sure they in Bristol recognised that, and he was speaking not only for the Executive, but for Bristol itself, in saying how heartily they welcomed the Society in their midst.

Railway Companies Thanked.

Sir RICHARD P. COOPER, Bart., proposed that a hearty vote of thanks be given to the various railway companies for the services they had rendered to the Society in dealing with the traffic arising out of the holding of the Show. He reminded the meeting of the enormous amount of extra work imposed on the railway officials, many of whom had worked night and day during the past week.

Mr. J. MARSHALL DUGDALE seconded the proposition with the greatest pleasure, because he knew the enormous amount of work thrown on the railway officials.

Suggestions by Members.

The PRESIDENT inquired if any Governor or Member had any remark to make or suggestion to offer for the consideration of the Council.

Mr. H. J. ELWES, F.R.S. (Colesborne Park, Cheltenham), said he wished to bring to the notice of the Council the request that they should appoint an expert in wool upon the same lines as in connection with the Chemical, Zoological, and Botanical Departments. He had found in the course of his experience that there were no men to go to for information and advice except men who were interested as manufacturers. He then read to the meeting the following letter on the subject which he had received from Mr. A. F. Barker, Professor of Textile Industries at the Bradford Technical College:—

June 30th, 1913.

DEAR SIR,—I have this morning been discussing with Mr. J. E. Fawcett, the President of the Bradford Chamber of Commerce, and Chairman of the Wool Section of that institution, the question of the appointment of a wool expert to link up the wool grower with the wool consumer. Mr. Fawcett is of the opinion that this is such an important matter that it should receive the careful consideration both of the Royal Agricultural Society and of the Bradford Chamber of Commerce, and he is prepared to recommend the proposal for the consideration of the Chamber upon receiving a distinct expression of opinion from the Royal Agricultural Society.

Bradford wool consumers have long felt that wool-growers have not made themselves as fully acquainted with the requirements of the trade as might be, and although many isolated attempts have been made to form some sort of a connection, comparatively little has been accomplished, and it is evident that much good might accrue from some such action as we understand the Royal Agricultural Society may be prepared to take.—Yours truly,

ALFRED F. BARKER,
Professor of Textile Industries.

Professor WALLACE (Edinburgh) supported the suggestion. He felt sure the Development Commissioners would support such a scheme if the Royal Agricultural Society would give the lead. He did not think there would be any difficulty in getting the money.

Mr. GEORGE BUTTERS (Leominster) asked the Council to consider the question of the railway charges for the transit of cattle. These used to be carried by the companies at goods rate, but now they had to pay passenger rate. It was a serious matter for the tenant-farmer to have to pay high rates when shows were at long distances.

The PRESIDENT undertook that the suggestions made should receive the careful consideration of the Council.

Thanks to the President.

Mr. EDWARD OWEN GREENING proposed a hearty vote of thanks to their distinguished President, not only for what he had done that day, but for what he did at all times in the service of the Society. They might congratulate him on presiding over a highly successful Show. Nowadays their annual gatherings were like milestones on a triumphal road of progress, but he could remember a period in the Society's history when things were very different.

Mr. W. S. FERGUSON (Pictstonhill), in seconding the resolution, said he was sure they all recognised the good work Lord Northbrook had done for the Society. The Royal Show was the greatest meeting of the kind in the world.

The motion on being put by the SECRETARY, was passed by acclamation.

The PRESIDENT expressed his thanks for the kind reception of the resolution proposed by Mr. Greening and seconded by Mr. Ferguson. He could assure them that it was a great pleasure to him to preside over a meeting like that. The work of the President of the Society, his Lordship said, was not very arduous, because they had such an excellent Council, composed of experienced and businesslike men; they had Committees who did their work most thoroughly, and the President had always the expert assistance of their Honorary Director, a capable Secretary, and an excellent staff. He begged to thank them very much for the kind vote which they had passed.

The proceedings then terminated.

WEDNESDAY, JULY 30, 1913.

At a Monthly Council held at 16 Bedford Square, London, W.C., the Earl of NORTHBROOK (President) in the Chair:—

Present:—Trustees.—Sir J. B. Bowen-Jones, Bart., Lord Middleton, Lord Moreton, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. Adcane, Mr. Percy Clutchley, Mr. J. Marshall Dugdale, Mr. H. M. Gicaves, Sir Gilbert Greenall, Bart., C.V.O.

Other Members of the Council.—Mr. D. T. Alexander, Capt. Clive Behrens, Mr. Henry Dent Brocklehurst, Maj.-Gen. J. F. Brocklehurst, C.V.O., C.B., the Hon. John E. Cross, Mr. J. T. C. Earle, Mr. James Falconer, Mr. Joseph Harris, Mr. W. Harrison, Sir Arthur G. Hazlerigg, Bart., Mr. R. W. Hobbs, Mr. W. J. Hosken, Sir Charles V. Knightley, Bart., Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. G. Norris Midwood, Mr. W. Nocton, Mr. C. M. S. Pilkington, Mr. F. Reynard, Mr. Fred Smith, Mr. E. W. Stanyforth, Lord Strachie, and Mr. E. V. V. Wheeler.

Governors.—Mr. W. W. Chapman and Mr. Beville Stanier, M.P.

The PRESIDENT, at the commencement of the proceedings, read the following letter which he had received from Major Wigram:—

Buckingham Palace,
July 5th, 1913.

DEAR LORD NORTHBROOK.—The King desires me once more to express his satisfaction with the excellent arrangements made in connection with yesterday's visit to the Royal Agricultural Show. His Majesty realises the care and thought that you, Sir Gilbert Greenall, and the stewards and members of the various

committees must have given to the organisation of all the details, and is glad to think that the Society can congratulate itself on an eminently successful show during the term of your Presidency. It was a happy inspiration to include among the exhibits a display of products of the Overseas Dominions, which gave the public an opportunity of gaining some knowledge of the agricultural conditions of the various parts of the Empire. The King has carried away a pleasing impression of his visit and of the very warm and enthusiastic welcome given to him by all present.—Believe me, yours very truly,

(Signed) OLIVE WIGRAM.

Proceeding, the PRESIDENT said he knew the Council would hear with very great regret of the grave illness of the Lord Mayor of Bristol. He had been very unwell for some time, but had determined to remain at his post and carry through his duties in connection with the visit of the Society. Although suffering much pain during the week of the Bristol Show, he continued with great courage to perform those duties, and they would remember how successfully he did so, and the hospitality he extended during their visit. The Lord Mayor had recently to undergo a serious operation, and, although he stood it well at the time, the Council would be sorry to hear that he was still very seriously ill. He (the President) would like to be allowed to write to the Lady Mayores to express their deep regret at the Lord Mayor's illness, their hope that he was making satisfactory progress towards recovery, and their sympathy with her and the members of the family in their anxiety.

The minutes of the last meeting of the Council held on July 2, 1913, were taken as read and approved.

The Marquess of Bute, Mr. Tankerville Chamberlayne, Cranbury Park, Winchester, Mr. W. E. Firth, Hurstly, Lymington, and Mr. J. W. Macfie, Rowton Hall, Chester, were elected Governors, and 203 duly nominated candidates were elected Members, and one Member was re-elected under By-Law 14.

Sir JOHN THOROLD said he thought the Council would like to know that Lord Northbrook during his presidency had succeeded in obtaining no less than 215 new members. (Applause). The PRESIDENT added that he was glad to be able to say that over seventy new members had been elected from the county of Hampshire, bringing the total number over 300, and thus entitling that county to an additional representative on the Council.

The Report of the Finance Committee was received and adopted. In presenting this report, Mr. ADEANE called attention to a matter which came up informally at the Finance Committee meeting on the previous day—the desirability of the Society doing something to encourage skilled labour on the farm. They did something for all classes connected with agriculture in its different branches, but, so far as he was aware, they did nothing at present to encourage the skilled labourer. He was not going to move any resolution, but he merely wished to air the question before the Council, in the hope that they would have some expression of opinion from Members.

In this connection, suggestions were made by Mr. BEVILLE STANIER, M.P., Mr. FALCONER and Mr. PILKINGTON.

On the presentation of the Report of the Veterinary Committee, Mr. MANSELL said he would like to raise the question of the Society urging on the Board of Agriculture the importance of trying the serum treatment with reference to Swine Fever. Experiments had been made in Holland, Norway, and other countries, and he believed with considerable success. Seeing that they were making no headway, and were spending enormous sums of money in this country, he thought the Board of Agriculture should be urged to take steps to try the serum treatment. Mr. STANIER inquired whether Sir John McFadyean had gone into the question, or whether he might be asked to do so on behalf of the Society. Sir JOHN MCFADYEAN said he was very well acquainted with the use of serum in the treatment of Swine Fever, as he had endeavoured to keep himself posted regarding that method of treatment since it was first introduced into the United States a few years ago. He was also pretty fully acquainted with the use of the method in Holland, and with that

knowledge he would be very sorry to press upon the Board of Agriculture that they should test the use of serum. The expression was, of course, very vague, but, as he understood it, the recommendation would be that the Board of Agriculture should imitate Holland, where he believed there were no restrictions whatever with regard to Swine Fever. The person who had Swine Fever on his premises in Holland could disperse the pigs and spread the disease to twenty other owners. It was all very well to say that each of those owners could considerably reduce his losses by employing serum, but he thought it was well the Council should know that, as an alternative to the method of endeavouring to control and eradicate Swine Fever, the use of serum could not, in his opinion, be recommended.

Captain BEHRENS drew attention to the position and size of the judging ring for Shorthorns in the Bristol Showyard and suggested that better accommodation might be provided in future. The PRESIDENT said this matter would receive attention.

Sir JOHN THOROLD, as Chairman of the Committee of Selection, proposed, and it was unanimously agreed, that votes of thanks be given to Mr. Cyril E. Greenall, Steward of Horses and of the Veterinary Examination; Mr. H. W. Seccombe Wills, Steward of Forage; the Hon. John Boscawen and Mr. A. A. Paton, Stewards of the Horticultural Exhibition; and Mr. George Marshall, Steward of the Forestry Exhibition. These gentlemen, who were not Members of the Council, did a great deal of very useful work for the Society in an honorary capacity, and the Society was very greatly indebted to them. The PRESIDENT said they would all agree with what had fallen from Sir John Thorold, and that their thanks are very greatly due to the gentlemen named.

At the conclusion of the ordinary business, the PRESIDENT said it was with most profound sorrow that he had to announce that a telegram had just been received to say that their colleague, Sir Richard Cooper, had passed away that morning. The sad news, his Lordship said, had come upon him with terrible suddenness, because although he had heard that Sir Richard was unwell, he had no idea that his condition was at all a grave one, and he fancied many Members of the Council thought the same. It was unnecessary for him to refer to the very great services that Sir Richard Cooper had for so long a time rendered the Society, and he would like to move that a letter be written to the relatives expressing the Council's very sincere and deep regret at the loss they had sustained by the death of their colleague and their sympathy with the family in their bereavement.

The Council then adjourned over the autumn recess until Wednesday, November 5, 1913.

WEDNESDAY, NOVEMBER 5, 1913.

At a Monthly Council, held at 16 Bedford Square, London, W.C., the Earl of NORTHBROOK (President) in the Chair:—

Present:—Trustees.—Sir J. R. Bowen-Jones, Bart., Mr. F. S. W. Cornwallis, the Earl of Coventry, Lord Moreton, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. R. W. Adeane, Mr. Percy Crutchley, Mr. J. Marshall Dugdale, the Right Hon. Sir A. E. Fellowes, K.C.V.O., Sir Gilbert Greenall, Bart., C.V.O.

Other Members of the Council.—Mr. D. T. Alexander, Mr. T. L. Aveling, Capt. Olive Behrens, Mr. H. Dent Brocklehurst, Major-General J. F. Brocklehurst, C.V.O., C.B., Mr. T. A. Buttar, Mr. R. G. Carden, Mr. Richardson Carr, Mr. John Evans, Mr. J. Falconer, Mr. Howard Frank, Mr. W. T. Garne, Lord Harlech, Mr. W. Harrison, Sir A. G. Hazlerigg, Bart., Mr. J. H. Hine, Mr. Arthur Hiscock, Mr. R. W. Hobbs, Mr. W. F. Ingram, Sir C. V. Knightley, Bart., Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. C. Middleton, Mr. G. Norris Midwood, Mr. John Myatt, Mr. W. Nocton, Mr. Henry Overman, Mr. E. G. Patterson, Mr. C. M. S. Pilkington, Mr. H. F. Plumptre, Mr. G. G.

Rea, Mr. F. Reynard, Mr. C. C. Rogers, Mr. John Rowell, Mr. Fred Smith, Mr. E. W. Stanyforth, Lord Strachie, Mr. C. W. Tindall, Mr. A. P. Turner, Mr. E. V. V. Wheeler, and Mr. C. W. Wilson.

Governors.—Mr. W. W. Chapman and Mr. Harold Swithinbank.

The following Members of the Shrewsbury Local Committee were also present :—The Earl of Powis, Mr. B. Blower, Mr. H. C. Clarke, Mr. Beville Stanier, M.P., Major C. R. B. Wingfield, and Mr. E. Clothier (Local Secretary).

The minutes of the last meeting of the Council, held on Wednesday, July 30, 1913, were taken as read and approved.

The PRESIDENT said he knew the Council would learn with very great regret of the loss, since their last meeting, of one of their colleagues by the death of Mr. Henry Herbert Smith, of Bowood, Calne, who died on October 19. Mr. Smith had been a Member of the Society since 1874, and from 1905 till his death had represented the Division of Wiltshire on the Council.

Mr. ADEANE said the Council would remember that at their meeting in July the question of giving rewards for skilled agricultural labour and long service had been referred to the Finance Committee for their consideration, and they had been asked to report at the meeting that day. It was obvious that it was impossible to deal with the whole country at one time, and therefore the Finance Committee recommended that the Society should confine its efforts to the area visited by the Show, with the exception that some provision should be made for those parts of England which had not been visited by the Society for a great number of years. They very much hoped that the local societies, of which there was a great number scattered about England, would co-operate with the Royal Agricultural Society for the purpose, and, if they would do so, they would be exceedingly useful as a means of distributing the awards. The Finance Committee recommended that bronze medals and certificates should be given to the winners in the local competitions, and they further recommended that the holders of these medals and certificates should be qualified to compete for a championship which would be given by the Royal, such a championship to consist, he hoped, of a substantial money prize and a silver medal. With regard to management they recommended that the matter should be handed over to the Farm Prizes Committee, who already operated in the area with which they proposed to deal, and that that Committee should be given power by the Council to form a sub-committee and co-opt local Members to that body. He thought they would secure two things in that manner; so far as the Society was concerned they would secure continuity of management, and so far as the locality was concerned they would secure full representation. He hoped the Council would adopt the scheme in general and leave the details to be threshed out by the Committee.

Mr. ADEANE then read the detailed recommendations of the Finance Committee, which were unanimously approved after observations by Mr. MANSELL, Mr. PILKINGTON, Mr. PATTERSON, Mr. BEVILLE STANIER, M.P., Mr. FALCONER, Mr. BROCKLEHURST, and Mr. DUGDALE. The PRESIDENT stated that the initiation of this proposal was due to Mr. Adeane, and he was sure the Council would like to express their thanks to him for the attention he had given to it, and the great amount of trouble he had taken in the matter. (Hear, hear.)

On the motion of Sir JOHN THOROLD, seconded by Mr. ADEANE, Lord Rothschild was unanimously elected a Vice-President of the Society in the room of the late Sir Richard Cooper. Mr. ADEANE said he did not think the Council could possibly find any man who had done more for and earned better the honour now bestowed upon him. When he (Mr. Adeane) had occupied the unenviable position of Chairman of the Park Royal Company, in liquidation, and when he had to find some one who would feed that white elephant, Harewood House, the times were critical, and he remembered one particular moment, not known to the Council, when they were in great straits, and, if it had not been for Lord Rothschild's assistance on that occasion, the Society would have been in a very difficult position. He was very glad to be able to make acknowledgment of

those services; and not only that, but for some years his lordship had supplied them with prizes for the Milk Yield classes at the Show. Further, in the case of the late Tuberculosis Experiment, the cost of which was estimated at 800*l.*, but which only cost 600*l.*, the difference was made up by Lord Rothschild's generosity. Last, but by no means least, their thanks were due to Lord Rothschild for allowing Mr. Richardson Carr, one of the right hands of the Society, to be present at their debates, and give them such invaluable help in their work.

Mr. MAY, as the Society's representative on a committee formed for the purpose of raising a fund in connection with the Lawes and Gilbert Centenary Celebrations, gave notice of a resolution to the effect that an appeal be sent out on behalf of this fund by the Royal Agricultural Society to the Members for individual donations, and, if Mr. Adeane, as Chairman of the Finance Committee would allow him, he would like to make a further suggestion, that a contribution should be made from the funds of the Society to supplement any amount which might be contributed by personal efforts.

In presenting the Report of the Tuberculosis Experiment Committee, Lord NORTHBROOK said he thought the Council would like to know that the demonstration which, on May 4, 1910, the Chemical and Woburn and Veterinary Committees were requested to carry out, had been brought to a conclusion. The Committee appointed to carry out the demonstration were considering their report, which they hoped to present at the next meeting of the Council, and with that report they hoped to give in the appendix full details and particulars of the procedure with the information as to the results of the tuberculin tests the animals had been subjected to. On the present occasion he only wished to say that they had succeeded in showing, in the words of the reference to them, that by means of isolation it was possible to rear healthy stock from tuberculous parents. He might add that the cost to the Society, mainly owing to the generosity of Lord Rothschild, had been below the sum the Council were prepared to spend on it, and considerably within the amounts of the annual estimates that had been submitted to and approved by the Council.

A Report from the Special Committee having been received and adopted, Sir JOHN THOROLD called attention to No. 7 of the regulations, governing the offer of the Gold Medal for Agricultural Research, stating that the monograph or essay of the successful candidate was to be published in the Journal, if in the opinion of the Council it was suitable for the purpose. Both of the essays submitted on this occasion had been published before they were sent in, and as it was the custom not to include in the Journal anything that had been previously published elsewhere, he would like the instruction of the Council that in the circumstances the Journal Committee need not be called upon to publish either of the essays in question. It was very essential that they should have all their articles in as soon as possible, and the publication of one of the essays might cause delay. Apart from that, their having been previously published was a reason against their appearing in the Journal.

On being put to the meeting, the suggestion of Sir John Thorold that it be an instruction to the Journal Committee that these essays be not published, was approved.

Lord STRACHIE, pursuant to notice, moved the following resolution:—

"That the Board of Agriculture be asked to raise the preference limit imposed whereby to a large extent only occupiers of 100 acres and under can benefit under their scheme for the improvement of live stock."

His object in moving that resolution was to bring before the Council the scheme for the improvement of live stock issued by the Board of Agriculture. The county he represented felt very strongly as regards the limitation of preference. In the first place, the amount—\$7,000*l.*—was so small, and it was felt that if there was a hard and fast line that preference was to be given to occupiers of not over 100 acres, or of an annual value for purposes of income

tax not exceeding 100%, then there would be a very small sum indeed for those occupiers of over 100 acres. He did not wish to labour this question, but he would like the Council to consider the suggestion that they might ask the Board of Agriculture to reconsider this preference limit, and not give it in this particular way. He quite recognised that it was necessary to safeguard the small-holder, and to ensure that the small man was not pushed to the wall, but, on the other hand, if they were going to keep out the large occupiers, men with 400 or 500 acres of land, the leaders of the agricultural interests, the only result would be that these men would stand aside, and there would be nobody to take the initiative, so that the whole scheme would be in danger in consequence. It would, in his opinion, be very difficult to work this scheme if the large occupiers were told that they would only come in at the end. He had heard that the Board of Agriculture were reconsidering this matter, and were going to issue rules and regulations for carrying out the details of the scheme. If, therefore, representations could be made to the Board by agricultural societies, and especially by the Council of the Royal, something might be done.

Mr. PATTERSON was sorry to be in disagreement with the resolution. It was not the amount he disagreed with, but the principle. It did not go far enough. If he was in order, he would like to move an amendment that the word "remove" should take the place of the word "raise." It was not advisable that it should go out from the Society that it approved in any way the suggestion that any agriculturist, no matter how large the area he occupied, should be excluded from the benefits of the live stock scheme. It was rather a hard thing that those farmers, to whose efforts it was almost entirely due that British live stock held its present position, should, on the first occasion the Government recognised the necessity for doing something for live stock, be excluded, or even to suggest that it was desired to exclude them. He had pointed out to Mr. Cheney that, as Lord Strachie had mentioned, the large farmers had to provide their share of the money, and had also to provide the machinery to work the scheme. In reply, he had been told that the farmers would have to provide the money, but that it was optional whether they gave their services. It was obvious that if the occupiers of 100 acres or less were to be depended on for carrying out the work of the live stock scheme, the whole thing would fall to the ground. If the larger farmer of the country believed that the Society approved of the suggestion that he should be excluded from these schemes, it would have a detrimental effect on the Society. It could quite well be left to the fairmindedness of the larger farmers that they would see that the small-holder was treated as generously as possible, and he did feel as well that if it was to be a scheme to aid the small-holder it was only fair that they should be told so plainly, and that it should not be set forth as a scheme to benefit live stock, if it was only for the small-holder.

Mr. FALCONER seconded the amendment.

Mr. BROCKLEHURST and Mr. DUGDALE having spoken in favour of the amendment, the resolution was then carried in the following terms:—

"That the Board of Agriculture be asked to REMOVE the preference limit imposed whereby, to a large extent, only occupiers of 100 acres and under can benefit under their scheme for the improvement of live stock."

On the motion of the PRESIDENT, the Seal of the Society was ordered to be affixed to the agreements between the Society and the Corporations of Shrewsbury and Manchester in connection with the holding of the Shows of 1914 and 1916 respectively.

The Report of the Council to the Annual General Meeting of Governors and Members, to be held at the Royal Agricultural Hall, Islington, at 12.15 p.m., on Wednesday, December 10, was prepared and ordered to be issued.

Other business having been transacted, the Council adjourned until Wednesday, December 10, at 11 a.m., at the Royal Agricultural Hall.

WEDNESDAY, DECEMBER 10, 1913.

At a Monthly Council held at the Royal Agricultural Hall, Islington, N., the Earl of NORTHBROOK (President) in the Chair:—

Present:—Trustees.—Lord Moreton, Sir John H. Tholud, Bart.

Vice-Presidents.—Mr. C. R. W. Adcane, Mr. Percy Crutchley, the Right Hon. Sir A. E. Fellowes, K.C.V.O., Sir Gilbert Greenall, Bart., C.V.O., the Hon. C. T. Parker, the Earl of Yarborough.

Other Members of the Council.—Mr. D. T. Alexander, Mr. T. L. Aveling, Capt. Clive Behrens, Mr. E. W. Betts, Mr. H. Dent Brocklehurst, Mr. Davis Brown, Mr. T. A. Buttar, Mr. Richardson Carr, Mr. W. W. Chapman, the Hon. J. E. Cross, Mr. Arthur E. Evans, Mr. John Evens, Mr. J. Falconer, Mr. W. T. Garne, Mr. Joseph Harris, Mr. W. Harrison, Lord Hastings, Mr. R. W. Hobbs, Mr. W. J. Hosken, Mr. W. F. Ingram, Mr. Dunbar Kelly, Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. G. Norris Midwood, Mr. T. H. Miller, Mr. W. Nocton, Mr. Henry Overman, Mr. C. M. S. Pilkington, Mr. H. F. Plumptre, Mr. J. E. Rawlence, Mr. F. Reynard, Mr. Fred Smith, Mr. C. W. Tindall, Mr. A. P. Turner, Mr. E. V. V. Wheeler, Mr. C. W. Wilson, and Mr. L. C. Wrigley.

The following members of the Shrewsbury Local Committee were also present:—The Mayor of Shrewsbury, Mr. B. Blower, Mr. H. C. Clarke, Col. A. H. O. Lloyd, M.V.O., Mr. Beville Stanier, M.P., and Mr. E. Clothier (Local Secretary).

The Bristol Local Committee were also represented by Sir Frank Wills, Mr. Sidney Humphries and Mr. Eldred G. F. Walker.

The minutes of the last meeting of the Council, held on Wednesday, November 5, 1913, were taken as read and approved.

Fifty-one duly nominated candidates were admitted into the Society as Members.

The PRESIDENT said it would be remembered that last year it was suggested that it would be a considerable convenience to Members of Council if they could hold their meeting at the Royal Agricultural Hall on the day of the annual general meeting; and he was sure they would desire to thank the Royal Agricultural Hall Company and the Smithfield Club for their courtesy in allowing this meeting to be held in that room. He had received a letter in the following terms from Lord Rothschild:—

"I very much regret having been unavoidably prevented by stress of work from writing to you before to express my best thanks for the honour conferred on me by the Council of the Royal Agricultural Society in naming me a Vice-President. I hope that you will believe that I greatly appreciate the privilege which associates me with a Society which promotes the welfare and extends the work of agriculture in which I take so warm an interest."

The Report of the Finance Committee was received and adopted, together with the Accounts of the Bristol Show, as to which an explanation was made to the Council by Mr. ADCAINE, Chairman of the Committee. Mr. MAY moved that a sum of one hundred guineas be voted by the Society to the Lawes and Gilbert Centenary Celebrations Fund. Mr. G. NORRIS MIDWOOD having seconded the motion, Mr. TURNER moved as an amendment that the matter be deferred. He did not see Sir Bowen Bowen-Jones present, but at the meeting of the Woburn Committee on the previous day they found themselves in a great deal of difficulty, and probably the Society would have to find a considerable sum of money to help them out of these difficulties. He thought, therefore, that it would be better to defer the matter until next February when a report would be received from the Woburn Committee, who had arranged a meeting in January to consider the whole question. Until that report was presented he thought the Council should defer the matter of a contribution to the Lawes and Gilbert Centenary Fund. Lord HASTINGS seconded the amendment, which, with the consent of Mr. May, was put to the meeting and carried.

In moving the Report of the Chemical and Woburn Committee, Lord HASTINGS said the Council would have heard from the Report that the position as to Woburn was by no means satisfactory. Mr. Turner had foreshadowed the fact that the Committee would have to hold a special meeting, and that the Report would be presented to the Council in February next, when the whole subject would come up for discussion.

Lord NORTHBROOK, Chairman of the Tuberculosis Experiment Committee, stated that the Demonstration commenced by the Society in 1911 had been brought to a conclusion. The Report of the Committee had been settled, printed, and was now in the hands of Members of Council. He would mention that supplementary to the Report an appendix would be issued which would give the temperature charts of the cows tested, the cows obtained for the purpose of procuring the calves, and also the temperature charts of the periodical testing of the calves, and the reports of those gentlemen who examined the carcasses when the animals were slaughtered. It was very desirable that when Members studied the Report they should have the appendix, the charts, and other information before them, and he would, therefore, suggest to the Council that it would be desirable that any discussion of the Report be postponed until the next meeting of the Council, by which time Members would have had ample time for considering the Report and other information.

Sir JOHN THOROLD, in the absence of the Duke of Devonshire (Chairman of the Special Committee), presented a Report from the Referee (Dr. William Somerville), expressing regret that he did not see his way to recommend the award of the Society's Gold Medal for Agricultural Research to either of the authors of the two essays that had been submitted.

On the motion of Mr. MANSELL, seconded by Mr. BEVILLE STANIER, it was unanimously resolved :—

"That the Council of the R.A.S.E. approach the Argentine Rural Society on the subject of the restrictions now in force in respect of the importation of animals into that country from England during the time of outbreaks of Foot-and-mouth disease in this country, and suggesting to that Society that, having regard to the great care which is taken by the British Government to isolate all cases immediately they occur, the Argentine Government might with advantage institute a fifty mile zone instead of a time limit period of immunity from disease."

The following Standing Committees were appointed for 1914 :—Finance, Journal and Education, Chemical and Woburn, Botanical and Zoological, Veterinary, Stock Prizes, Implement, Showyard Works, Selection, Dairy and Produce, and Special. The present Members of the various Standing Committees were (with some exceptions) reappointed to those Committees. Mr. Mansell was added to the Finance Committee, Captain Seward to the Journal and Education, Botanical and Zoological, and Veterinary Committees, Mr. Rawlence to the Veterinary Committee, Mr. Dunbar Kelly to the Dairy and Produce Committee, and the Duke of Devonshire, Lord Harlech, and Mr. Henry Overman to the Committee of Selection.

Sir AILWYN FELLOWES gave notice that at the next Council meeting he would move the following resolution :—

"That in the opinion of the Council the time has now arrived when a committee should forthwith be appointed to consider what steps could be taken to increase the membership of the Society, and in what manner the Society could be made of still more use to its Members."

Other business having been transacted, the Council adjourned over the Christmas recess until Wednesday, February 4, 1914.

Proceedings at the Annual General Meeting of Governors and Members,

HELD AT THE ROYAL AGRICULTURAL HALL, ISLINGTON,

WEDNESDAY, DECEMBER 10, 1913.

THE EARL OF NORTHBROOK (PRESIDENT) IN THE CHAIR.

Present:—Trustees.—Sir J. B. Downen-Jones, Bart., Lord Moreton, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. R. W. Adeane, Mr. Percy Crutchley, the Right Hon. Sir Ailwyn Fellowes, K.C.V.O., Sir Gilbert Greenall, Bart., C.V.O., the Hon. Cecil T. Parker, the Earl of Yarborough.

Ordinary Members of the Council.—Mr. D. T. Alexander, Mr. T. L. Aveling, Captain Clive Behrens, Mr. E. W. Betts, Mr. H. D. Brocklehurst, Mr. Davis Brown, Mr. T. A. Buttar, Mr. Richardson Carr, Mr. W. W. Chapman, the Hon. John Cross, Mr. Arthur E. Evans, Mr. John Evens, Mr. James Falconer, Mr. W. T. Garne, Mr. Joseph Harris, Mr. William Harrison, Lord Hastings, Mr. R. W. Hobbs, Mr. W. J. Hosken, Mr. J. Howard Howard, Mr. W. F. Ingram, Mr. Dunbar Kelly, Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. W. A. May, Mr. G. Norris Midwood, Mr. T. H. Miller, Mr. John Myatt, Mr. William Nocton, Mr. Henry Overman, Mr. C. M. S. Pilkington, Mr. H. Fitzwalter Plumptre, Mr. J. E. Rawlence, Mr. Frederick Reynard, Mr. Fred Smith, Mr. C. W. Tindall, Mr. Arthur P. Turner, Mr. E. V. V. Wheeler, Mr. C. W. Wilson, Mr. Louis O. Wrigley.

Governors.—Mr. H. L. C. Brassey, M.P., Mr. Beville Stanier, M.P., Mr. Martin J. Sutton, Mr. H. H. Vivian.

Honorary Member.—Professor Sir John McFadyean.

Members.—Sir William Vincent, Bart., Messrs. E. J. Appleby, E. W. Beck, Arthur Britten, G. G. Capon, F. J. Casserley, M. C. Clarke, Thomas Corbett, Percy W. Cox, Major P. G. Craigie, C.B., Messrs. Bennett Fitch, Alan R. Gibson, Henry Walter Gilbey, N. Simons Harrison, W. Higgott, H. G. Hiron, T. A. Huband, W. T. Jordan, J. Pittman King, Col. A. H. O. LLoyd, M.V.O., Messrs. K. J. J. Mackenzie, John McLaren, O. W. Moorsom-Roberts, Thomas M. Oldham, C. S. Orwin, J. Egerton Quedstedt, J. R. Rawlence, B. Henry Rew, Frank Riggall, John P. Roberts, St. John B. Roscoe, the Rev. H. M. Rowdon, Messrs. F. G. Samson, Richard Stratton, C. Howard Taylor, J. Herbert Taylor, George D. Thody, Howard Thomas, F. H. Thornton, E. Trimen, Eldred G. F. Walker, Major C. R. B. Wingfield, Professor John Wrightson, &c., &c.

The PRESIDENT, in his opening remarks, said, in the first place, he would like to express on behalf of the Society their thanks to the Agricultural Hall Company and the Smithfield Club for their courtesy in again allowing the Society to hold the meeting in that room, thus affording a great convenience to large numbers of Members of the Society. He had received a letter from Lord Middleton expressing regret at his inability to be present that day.

Accounts.

The first item on the agenda was the presentation of the balance-sheet, and the Council formally submitted the balance-sheet for the year 1912, which, with the statement of ordinary receipts and expenditure, was published in the last volume of the Journal. The Society was in a somewhat stronger financial position than it was a year ago, and from the accounts which all those present had in their hands it would be seen that the net profit to the Society on the Bristol Show was 3,115*l.*, which had recouped them for the loss which, owing to unfortunate circumstances, was incurred at Doncaster last year.

Report.

It would be noticed from the Report of the Council that during the past year the Society had lost by death a good many of its supporters, and that among those were several Members and ex-Members of the Council.

The late Sir Richard Cooper was well known, at home and abroad, as a large and successful breeder and exhibitor of pedigree stock. Sir Richard had been a Vice-President of the Society, a regular attendant at their Council and committee meetings, and a Steward of Finance at their Annual Shows. Few men had given the Society more valuable assistance, and his loss was deeply regretted by his colleagues.

Mr. Henry Herbert Smith had been a Member of the Society for nearly forty years, and had been a Member of Council since 1905.

Lord Arthur Cecil, who took a keen interest in horse and pony breeding, was also an old Member of the Society, and served for five years on the Council.

The late Mr. Joseph Martin, who was present at the annual meeting last year, was well known to almost all of them. He was a valued Member of the Council for over thirty years, and although he retired from the Council in 1905, he continued regularly to attend the general meetings of the Society.

He had with regret also to announce the death of Monsieur Louis Passy, who had the Honorary Membership of the Society conferred upon him in the year 1891 for his services to European agriculture. Monsieur Passy was a distinguished personage in French agricultural circles, and from 1885 until the present year occupied the position of Secretary of the National Agricultural Society of France.

They had, he was sorry to say, recently lost another of their honorary Members by the death of Mr. James Macdonald, who was known to many of those present as the popular Secretary of the Highland and Agricultural Society of Scotland, and, amongst other things, the editor of that excellent and exhaustive work, "Stephens' Book of the Farm." Mr. Macdonald was a great worker in the cause of agricultural education, and was in a great measure responsible for the establishment of the National Agricultural Examination Board.

And on Friday last the death occurred of Mr. Headly, of Leicester, who as an exhibitor in the implement section had attended upwards of fifty of their annual Shows.

Perhaps the paragraphs in the Report of principal interest were those which referred to the annual Show held at Bristol in the first week of July. The Council were glad to report that the Show was a great success in every respect—in the number and quality of exhibits of live stock, in the implement and machinery departments, in the attendance, and in the financial result.

His Majesty the King honoured the Society by visiting the Show on July 4, and made a comprehensive tour of the Showyard, including a visit to the exhibition from British Dominions overseas, which owed its inception to the Local Committee at Bristol. His Majesty was graciously pleased to express his congratulations to the Society on the success of the Show, and his satisfaction with the arrangements made for his reception and the enthusiastic welcome given him by all present.

Their hearty thanks were due to the ex-Lord Mayor of Bristol (Mr. Councillor Lowe) for the great assistance he rendered the Society, and the hospitality he extended to them. It was with very great pleasure that they heard that Mr. Lowe was making good progress on the road to recovery from the severe illness which overtook him at the time of the Show. They were also indebted to the Members of the Corporation, to the Duke of Beaufort, Chairman, to Sir Frank Wills, and to the other Members of the Local Committee, to the Honorary Local Secretaries, the Town Clerk, Mr. Taylor, and Mr. George Nichols, to the Society of Merchant Venturers and to the Commoners and inhabitants of Bristol for providing a beautiful site for the Show.

They also desired to express thanks to the Gloucestershire Agricultural Society for their co-operation, and for giving up their annual show for the year.

Any reference to their annual Show would be incomplete without a cordial expression of their indebtedness to the Honorary Director, Sir Gilbert Greenall,

for his great services. (Applause.) Until he had the honour of being President of the Society, he hardly realised the enormous amount of work entailed in the preparation and arrangements for the annual Show, nor did he adequately appreciate Sir Gilbert's power of organisation, his power of work, his resourcefulness, and the amount of time and trouble he so willingly gave to his duties as Honorary Director. Might he remind them that this was the eighth occasion on which their hearty thanks had been due to Sir Gilbert for his valuable services in connection with the Show.

To refer very briefly to the other work of the Council during the past year, it would be observed that besides the usual scientific, experimental, educational, and advisory work carried out by the Council through its Standing Committees, they had undertaken and brought to a conclusion an interesting demonstration as to the possibility of rearing healthy stock from tuberculous parents. That Report had been presented to the Council that morning. It would be printed and circulated, and he believed it would be read with great interest by stock-breeders throughout the country.

The Committee had also appointed a Sub-Committee who had inquired into that difficult and perplexing problem—how to deal with swine fever. Their report also had been presented to the Council that day, and would shortly be printed and circulated.

The Society had been represented, on deputations to the Board of Agriculture on two important matters—the establishment of a national seed-testing station, and the regulations affecting the importation of cattle, sheep and pigs from Great Britain to the Colonies and foreign countries, both of which questions were receiving the consideration of the Board.

The Council had also decided to offer through Local Societies rewards for skilled agricultural labour and long service, and he was sure the announcement would meet with the general approval of Members of the Society.

With regard to Membership, they had now 10,434 Governors and Members on the register, or 127 more than at this time last year. That was so far satisfactory. But he thought a National Society like theirs might look to a very considerably larger Membership than they now had. He thought they should bear in mind that, although something like 700 new Members had been elected during the year, the net increase, as he had said, was only 127. The losses to the Society every year in Membership from deaths, resignations, and other causes were about 500, and that number of new Members was required each year to keep up their present figures. He would therefore like to make an earnest appeal to Members of the Society to use their individual efforts and to endeavour to get their friends and neighbours to join. He believed much might be done in this way, and that there were many persons who would be willing to become Members of the Society if personally asked to do so.

Shrewsbury Show.

The Show next year would be at Shrewsbury.

The schedule of prizes for live stock, which would shortly be issued, would include a larger number of classes than on any previous occasion, and the amount offered in prizes was the largest since the Society held their Show at Windsor in 1889.

The Shrewsbury Local Committee were giving a handsome contribution towards the prizes, and they had to thank the Breed Societies for again generously assisting them by offering a large number of prizes in various classes.

Under the presidency of Lord Powis, and with their good friend Sir Bowen Bowen-Jones as Chairman of the Executive Committee—(hear, hear)—they might confidently look forward to a most successful Show at Shrewsbury next year.

Research Medal.

With regard to paragraph 31 of the report, only two essays had been submitted this year for the gold medal offered by the Society for original

research in agriculture, and the referee to whom these essays were submitted regretted that he did not find himself in a position to recommend the award of the medal to either of the authors of the two papers. He might say that the regulations governing the award of the Research Medal next year were being reconsidered, and would, he hoped, be settled by the Council in February.

Adoption of Report.

The PRESIDENT said the Report had been circulated through the post to each Member of the Society, and the meeting would doubtless be willing that it should be taken as read. He would therefore call on Mr. Quested to move its adoption.

Mr. J. EGERTON QUESTED (Oheriton, Kent) regretted that the presentation of the Report had not been put into better hands than his, but said he would do his best in asking the meeting to adopt it. He fully endorsed the remarks that had fallen from the President with regard to the membership, and he was sure that everyone in the room would appreciate those remarks and try his utmost so that at the next Annual General Meeting they would be in a much better position with regard to the number of Members. With regard to the paragraph in the Report dealing with foot-and-mouth disease, he was sure that the Members would appreciate what had been done, and he was obliged to the Council for moving in that direction. At the same time they all felt much aggrieved that no good results had emanated from the Deputation to the President of the Board of Agriculture. Since then there had been an outbreak of foot-and-mouth disease, and they knew that they were still debarred from sending their cattle, sheep, and pigs to the Argentine for six months. He hoped the Council would take notice of this, and would not allow the matter to lie dormant, but would use every endeavour to get the resolution, which he understood had been moved and carried by the Council, put into operation.

He would also like to say a word relating to animal diseases, referring more particularly to sheep scab. He believed that up to the present there had been something like 141 cases of sheep scab outbreaks during 1913, and he thought the time had come when the Royal Council should put their finger on the weak spot of the administration of that Order, and try their utmost to stamp sheep scab out entirely from this country. He thought they would agree with him that if a large continent like Australia, and New Zealand, could boast of having an entirely clean bill of health with regard to that complaint, it was a matter of reflection on the English Board of Agriculture that our small island had to admit that there had been 141 cases this year. He had much pleasure in moving the adoption of the report.

Mr. JOHN McLAREN (Leeds) had much pleasure in seconding the adoption of the Report, which had been so ably moved by Mr. Quested. He thought they would agree that it was a very satisfactory Report. They had a very good membership, over ten thousand. The profits from the Bristol Show were altogether satisfactory, and the financial position was, he believed, better than it had been since the foundation of the Society. All the departments of work seemed to be "going strong," and he only regretted, with other Members, that the offer of awards for research work had not produced a better result. At the same time, he trusted that the Council would not lose sight of that most important subject. At the present time he thought that research was probably one of the most important matters the Council had to consider, and no doubt the elimination of disease would be largely promoted by considerable research. He thought that the greatest encouragement would be well bestowed by the Society upon research work. It had also been a great satisfaction to him in reading the Report to see how generously the invitations were coming forward from large centres of population to hold the Show in their districts. In the history of the Society, he did not think the invitations had been settled so far ahead as was the case at the present time. He thought that showed that the work of the Society was being recognised, and that the public were willing and anxious to do all they could to help forward the work

of that great Society. Then there was another very important matter dealt with which he trusted would come to fruition in a very short time—the establishment of a seed-testing station. He saw that there had been a deputation appointed to press forward the claims of agriculturists for a national station for testing seeds. He did not think they all recognised the extreme importance of the subject. He was quite certain that there was a great deal of adulteration of seeds at the present day, and he felt sure that if a testing station were established it would be to the benefit and advantage of agriculturists of the country.

Mr. O. W. MOORSOM-ROBERTS (Norbury, Surrey) said that as the Report showed that the Society was taking a very wide interest in everything that concerned agriculture he would like to draw attention to the work of the Agenda League, a more or less charitable organisation that had been started in London, one of the objects of which was the supply of milk of the purest kind to the people of the poorer districts, and as far as possible at a price they could afford to pay for it. Most of the large County Council schools had a great demand for pure milk for children, and as a member of the Care Committee his experience was that there was some difficulty in getting really pure milk. He suggested that the Council might widen their influence and endeavour to secure the co-operation of agriculturists in this matter.

The Report of the Council was then unanimously adopted.

Election of President.

Mr. BEVILLE STANIER, M.P. (Market Drayton) said he rose with great pleasure to propose that the Earl of Powis be elected President of the Society, to hold office until the next ensuing annual general meeting. He was perfectly aware that that important position should be held by a great agriculturist, and in Lord Powis they had a very keen agriculturist, a noted breeder of stock, the Lord-Lieutenant of the county to which the Show was so soon going, and a man who was intimately connected with Shropshire, Staffordshire, and the Welsh counties. He was descended from the great Robert Clive, who had been one of those who signed the petition to the Crown for the incorporation of their Society in 1840. They could be perfectly certain that Lord Powis would do his utmost to uphold the fair name of the Society, and to carry out the duties imposed upon him with every credit to themselves.

Major WINGFIELD (Shrewsbury) did not think it necessary to add much to what Mr. Stanier had said in proposing Lord Powis as President for next year, except that, as they were all aware, the Show was to be held at Shrewsbury next year, and it was a great pleasure to the local Members of the Society that the Council had selected a local gentleman to hold office as President for the ensuing year. He could only tell them that the election would be a popular one in the neighbourhood of the Show, and he hoped the meeting would support the resolution.

After the motion had been put to the meeting and unanimously carried,

The CHAIRMAN said that he had received a letter from Lord Powis expressing his great regret that an important engagement prevented him from being present at the meeting that day, and saying that if he were elected President, he would do his best to promote the interests of the Society, and that he considered that a very great honour had been conferred upon him.

Election of Trustees.

The PRESIDENT stated that the following twelve Trustees had been nominated by the Council in accordance with the by-laws, and on a show of hands they were duly elected:—

H.R.H. Prince Christian, K.G., Cumberland Lodge, Windsor.
Bedford, Duke of, K.G., Woburn Abbey, Bedfordshire.
Bowen-Jones, Sir J. B., Bart., Council House Court, Shrewsbury.
Cornwallis, F. S. W., Linton Park, Maidstone, Kent.
Coventry, Earl of, Croome Court, Severn Stoke, Worcestershire.
Devonshire, Duke of, G.C.V.O., Chatsworth, Chesterfield.
Gibbey, Sir Walter, Bart., Elsenham Hall, Elsenham, Essex.

Jersey, Earl of, G.O.B., G.C.M.G., Middleton Park, Bicester.
 Middleton, Lord, Birdsall House, Malton, Yorks.
 Moreton, Lord, Sarsden House, Chipping Norton, Oxon.
 Northbrook, Earl of, Stratton, Micheldever, Hampshire.
 Thorold, Sir John H., Bart., Old Hall, Syston, Grantham.

Election of Vice-Presidents.

The Vice-Presidents were elected in a similar manner, their names being as follows :—

Adeane, C. R. W., Babraham Hall, Cambridge.
 Crutchley, Percy, Sunninghill Lodge, Ascot, Berkshire.
 Derby, Earl of, G.O.V.O., C.B., Knowsley, Prescott, Lancashire.
 Dugdale, J. Marshall, Llwyn, Llanfyllin, S.O., Mont.
 Fellowes, Right Hon. Sir Ailwyn E., K.C.V.O., Honingham, Norwich.
 Feversham, Earl of, Duncombe Park, Helmsley, Yorkshire.
 Greaves, R. M., Wern, Portmadoc, North Wales.
 Greenall, Sir Gilbert, Bart., O.V.O., Walton Hall, Warrington.
 Northumberland, Duke of, K.G., Alnwick Castle, Northumberland.
 Parker, Hon. Cecil T., The Grove, Corsham, Wiltshire.
 Rothschild, Lord, Tring Park, Hertfordshire.
 Yarborough, Earl of, Brooklesby Park, Lincolnshire.

Election of Auditors.

Major P. G. CRAIGIE, C.B. (Lympstone), said he had much pleasure, as an ordinary Member of the Society, in moving the re-appointment of the Auditors. The terms of the motion were "That the best thanks of the Society be tendered to Messrs. Jonas M. Webb, Hubert J. Greenwood, and Newell P. Squarey for their services as Auditors, and that they be re-elected for the ensuing year." He was quite sure that his fellow Members did not regard that as altogether a formal motion, for their best thanks were certainly due to those gentlemen for the care and trouble they took for dealing with the accounts of that great Society. Re-echoing the President's feeling, he was sure that if individual Members of the Society would do their utmost to strengthen the membership, it would render the task of the Auditors still more pleasant.

The motion was seconded by Mr. J. HERBERT TAYLOR and carried *nem. con.*

Elections to the Council.

The PRESIDENT then announced, in accordance with By-law 87, the names of the following Ordinary Members of Council who had been elected to represent the several Divisions of the Society included in Group "B," in order that the meeting might "take cognizance of their election":—

Durham: Middleton, Christopher, Vane Terrace, Darlington.
 Yorks (West Riding), (two representatives): Lane-Fox, George R., M.P., Bramham Park, Boston Spa, and Stansforth, E. W., Kirk Hammeton Hall, York.
 Nottingham: Pilkington, Claude M. S., Wollaton, Nottingham.
 Leicester: Hazlerigg, Sir Arthur Grey, Bart., Nosaley Hall, Leicester.
 Rutland: Brocklehurst, Major-Gen. J. F., O.V.O., C.B., Ranksborough, Oakham.
 Suffolk: Smith, Fred, Deben Haugh, Woodbridge.
 Buckingham: Mathews, Ernest, Little Shardeloes, Amersham.
 Essex: Nocton, William, Mill House, Boxted, near Colchester.
 London (three representatives): Frank, Howard, 20 Hanover Square, W.; May, Wm. A., 3 Wellington Street, Strand, W.C.; and Chapman, W. W., 4 Mowbray House, Norfolk Street, W.C.
 Shropshire (two representatives): Harlech, Lord, Brogyntyn, Oswestry, and Mansoll, Alfred, College Hill, Shrewsbury.
 Hereford: Turner, Arthur P., Fayre Oakes, Hereford.
 South Wales: Rogers, C. Colman, Stanage Park, Brampton Bryan.
 Devon: Hine, John Henry, Pomphlett Farm, Plymouth, Plymouth.
 Wiltshire: Rawlence, James E., The Chantry, Wilton, Salisbury.
 Surrey: Kelly, Dunbar, Coombe Farm, Kingston-on-Thames.
 Hampshire: Seward, Capt. Percy W., Weston, Petersfield.

*Additional representative elected under By-law 83.

Suggestions of Members.

The PRESIDENT, having inquired if any Governor or Member had any remark to make or suggestion to offer for the consideration of the Council,

Mr. T. A. HUBAND said that at the general meeting last year he ventured to call attention to the very unsatisfactory condition with regard to swine fever, and he was pleased to hear that they might expect a report from the Veterinary Committee. He did not desire to anticipate that report, but he

wished very seriously again to direct attention to the terrible condition of the disease in the country. A year ago they anticipated that some really effective measures would be taken to deal with it. He was a farmer and also a veterinary surgeon, and he would like to protest against the injustice that he considered rested upon the profession in regard to the methods taken to deal with it. It was now twenty years since the Board of Agriculture took it over, and if anyone would take the trouble to read the reports of the Veterinary Advisors from the outset, he would see that strenuous measures had been advocated, and if these had been carried out, he ventured to say there would not be more cases of swine fever than Mr. Quedstedt had told them there were of sheep scab. He seriously hoped that every Member would do his utmost to induce the powers that be to stamp out this great scourge from amongst them. He was sure that if they could only induce the Chancellor of the Exchequer to extend some of his civilities to protecting the poor man's pig and leave the pheasants to look after the mangold wurzels, he would be doing an immense service to the country. (Laughter.)

Mr. BENNETT FITCH (Haling) drew attention to the disadvantage of the British farmer who had to spend large sums on manure, while corn could be grown on virgin land abroad without any manure.

The PRESIDENT said the questions raised would receive the attention of the Council.

Thanks to President.

Mr. MARTIN J. SUTTON (Wargrave) said he had the very great honour and privilege of proposing a vote of thanks to the President for his services during the year. No word was needed from him or from anyone else to induce the meeting to pass such a motion. They could not help remembering what a wonderful help he had always been. Referring to the question of new Members of the Society, if all future Presidents did as well as Lord Northbrook had done during the past year, in nominating so many new Members from Hampshire, the membership would soon be increased by several thousands. All who had been privileged to sit under his lordship's chairmanship, either at the Royal, the Royal Counties, or elsewhere, realised that he was sitting under a chairman or president with a marked ability for the post, and that ability had never been more exemplified than that day. They wished to thank Lord Northbrook sincerely for what he had done for the Royal. They were pleased to know that at the meeting of the Smithfield Club on the previous day he had been good enough to become president of that institution for the next year.

Sir WILLIAM VINCENT was glad to have the honour of seconding the vote of thanks to the President, and to endorse every word Mr. Sutton had said. It was a matter of great thankfulness that, in spite of the adverse circumstances which seemed to beset the world in these times, the Royal Agricultural Society had been able to show such a good record of work in the past year, due, in a great measure, to the efforts of the President. He heartily seconded the vote of thanks to him for his great services during the past year.

The motion was then put to the meeting by Mr. Sutton, and carried by acclamation.

The PRESIDENT, in reply, begged to thank Mr. Sutton for the very kind way in which he had proposed the vote of thanks, Sir William Vincent for seconding it, and all present for the cordial reception given to it. He felt it a great honour to have occupied the position of President of that great Society for the past year, and he would always look back with pleasure to his term of office. He had found the work very easy, thanks to the able assistance he had received from the Secretary, Mr. McRow, and his staff, and Sir Gilbert Greenall had relieved him of all anxiety with regard to the Show. He had received the greatest kindness from every Member of the Council during the year, and he wished to thank them for the loyal support they had given him in carrying out his duties. If, in the future, he could ever do anything to promote and forward the welfare and interests of the Society, he would have the very greatest pleasure in doing it.

BRISTOL SHOW,

JULY 1 TO 5, 1913.

Officials of the Show.

PRESIDENT:

THE EARL OF NORTHBROOK.

Honorary Director.

SIR GILBERT GREENALL, Bart., C V O., Walton Hall, Warrington.

Stewards of Live Stock.

Horses.

CYRIL E. GREENALL, The Manor, Carlton Scroop, Grantham.

JOHN ROWELL, Bury, Huntingdon.

Cattle.

JOSEPH HARRIS, Brackenburgh Tower, Carlisle.

Sheep and Pigs.

C. W. TINDALL, Wainfleet, Lincolnshire.

Steward of Dairying and Poultry.

ERNEST MATHEWS, Little Shardeloes, Amersham, Bucks.

Steward of Forage.

H. W. SECCOMBE WILLS, 15 Orchard Street, Bristol.

Steward of Veterinary Examination.

CYRIL E. GREENALL, The Manor, Carlton Scroop, Grantham.

Stewards of Implements.

F. S. W. CORNWALLIS, Linton Park, Maidstone.

The Hon. J. E. CROSS, High Legh, Knutsford.

Stewards of Refreshments.

PERCY CRUTCHLEY, Sunninghill Lodge, Ascot.

WILLIAM HARRISON, Hall House, Leigh, Lancashire.

Steward of Education Exhibition.

SIR J. B. BOWEN-JONES, Bart., Council House Court, Shrewsbury.

Stewards of Horticultural Exhibition.

The Hon. JOHN R. DE C. BOSCAWEN, Tregya, Perranwell, Cornwall.

A. A. PATON, Oneida, Sefton Park, Liverpool.

Stewards of Forestry.

GEORGE MARSHALL, Broadwater, Godalming.

C. COLTMAN ROGERS, Stanage Park, Brampton Brian.

Stewards of Finance.

CHARLES R. W. ADKINS, Babraham Hall, Cambridge.

THOMAS L. AVELING, Boley Hill House, Rochester.

RICHARDSON CARR, Estate Office, Tring Park, Herts.

SIR RICHARD COOPER, Bart., Shenstone Court, Lichfield.

Surveyor.

J. R. NAYLOR, F.R.I.B.A., Smith's Bank Chambers, Derby.

Secretary.

THOMAS MORROW, 16 Bedford Square, London, W.C.

JUDGES OF IMPLEMENTS.

Trials of Milking Machines.

(Trials held in April, 1913.)

BAYNTUN HIPPISELEY, Ston Easton Park, near Bath

JAMES SADLER, Ciewe Gates, Crewe

Trials of Hand Power Machines for Applying Fungicides or Insecticides in Powder Form.

(Trials held in May, 1913.)

CHARLES S. MARTIN, Dunnington Heath, Alcester.

JAMES M. YOUNG, Beechwood, Clarkson Avenue, Wisbech.

Miscellaneous Implements entered for Silver Medals.

W O BROWN, Appleby, Lancaster.

HARRY W. BUDDICOM, Penbedw, Naunerceh, Mold.

JUDGES OF LIVE STOCK, &c.

HORSES.

Shires.—Classes 1-10.

A. H CLARK, Moulton Eaugate,
Spalding.

JAMES WHINNERAH, Warton Hall,
Canforth.

Clydesdales.—Classes 11-18.

GEORGE BRAN, West Ballochry, Mon-
trosc.

DAVID KERR, Marshalland, Beith,
Ayrshire.

Suffolks.—Classes 19-26.

THOMAS COOK, Hobland House,
Bradwell, Great Yarmouth.

W. R. HUSTLER, Earls Hall, Cock-
field, R.S.O., Suffolk

Hunters.—Classes 27-40.

R. M. HARRIS, The Croft, St. Clears,
South Wales.

J. W. A. HARRIS, Ballykisteon Stud,
Limerick Junction, Co. Tipperary.

Polo Ponies.—Classes 41-45.

EUSTACE H. BARLOW, Sigsworth,
Pateley Bridge, Yorkshire

REV. A. E. GREEN PRICE, Tarrington
Rectory, near Hereford.

Cleveland Bays and Coach Horses.—
Classes 46 and 47.

W. SCARTH DIXON, Fairlight, Luton,
Beds.

Hackneys.—Classes 48-56.

ALFRED ROWELL, West Rudham
Hall, King's Lynn.

JOHN WREGHITT, East Thorpe,
Market Weighton

Hackney Ponies.—Classes 57-60.

W FORRESTER ADDIE, Estate Office,
Powis Castle, Welshpool.

GAVIN HADDEN, St. Audrey's, Priory
Road, Malvern.

Shetland Ponies.—Classes 61 and 62.

GAVIN HADDEN, St. Audrey's, Priory
Road, Malvern.

Welsh Ponies.—Classes 63-67.

JOHN R. BACHE, Stud Farm, Knighton,
Radnorshire.

Riding Hunters.—Classes 68-74.

J. S. H. FULLERTON, Bodwell Hall,
Trowbridge.

REV. E. A. MILNE, Chilfrome, Dor-
chester.

Park Hack and Riding Ponies.—

Classes 75-78.

M. A. MARTINEZ DE HOZ, 12, Hobart
Place, London, S.W.

Harness Horses.—Classes 79-90.

M. A. MARTINEZ DE HOZ, 12, Hobart
Place, London S.W.

ALFRED ROWELL, West Rudham
Hall, King's Lynn.

Draught Horses.—Class 91.

JOHN T. O. EADIE, The Rock, New-
ton Solney, Burton-on-Trent.

CATTLE.

Shorthorns.—*Classes* 92-104.

ROBERT BRUCE, Leinster House,
Dublin.

WILLIAM DUTHIE, Collynie, Tarves,
Aberdeenshire.

JOHN HANDLEY, Green Head, Miln-
thorpe.

Dairy Shorthorns.—*Classes* 105-109.

ALLAN SKELTON, Rosewarne Farm,
Woodham Ferris, Essex.

RICHARD STRATTON, The Duffryn,
Newport, Mon.

Lincolnshire Red Shorthorns.—

Classes 111-118.

JOSEPH BROCKLEBANK, Carlton-le-
Moorland, Newark.

GEORGE MARRIS, Kirmington, Brock-
lesbury, Lincs.

Herefords.—*Classes* 120-127.

T. S. MINTON, Montford, Shrewsbury.

JAMES STUCKEY, Whare Koa, Beaford,
N. Devon.

Devons.—*Classes* 128-134.

F. S. MERSON, Doniford, Watchet,
Somerset.

South Devons.—*Classes* 136-140.

JOHN HOARE, Mount Barton, Staver-
ton, Totnes.

Longhorns.—*Classes* 142-145.

WILLIAM SHAW, Fradley Old Hall,
near Lichfield.

Sussex.—*Classes* 147-152.

WILLIAM MASSIE, Mulgrave Estate
Office, Lythe, Whitby.

Welsh.—*Classes* 153-158.

WILLIAM JONES, Plas-y-Bryn, Llan-
bedr, Merionethshire.

Red Polls.—*Classes* 159-163.

HERBERT P. BLOFIELD, Morley Manor,
Wymondham, Norfolk.

Aberdeen-Angus.—*Classes* 165-170.

GEORGE CRAN, Morlich, Glenkindie,
Aberdeenshire.

W. S. FERGUSON, Pictstonhill, Perth.

Galloways.—*Classes* 171-175; and

Highland.—*Classes* 176 and 177.

DAVID BROWN, Stepford, Dumfries.

Ayrshires.—*Classes* 178 and 179.

JAMES NEILL, Barleith, Hurlford,
Kilmarnock.

British Holsteins.—*Classes* 181-185.

SAMUEL WALLACE, Swangley, Kneb-
worth Station, Herts.

Jerseys.—*Classes* 187-194.

JOHN A. FALLE, Faldonnet Farm,
Gorey, Jersey.

HERBERT PADWICK, The Manor
House, West Thorney, Emsworth.

Guernseys.—*Classes* 196-201.

T. R. GALLIENNE, The Ponchev,
Castel, Guernsey.

Kerrys.—*Classes* 203-206; and

Dexters.—*Classes* 208-211.

G. TITUS BARHAM, Sulbury Park,
Wembley, Middlesex.

Dairy Cattle.—*Classes* 213 and 214.

ALLAN SKELTON, Rosewarne Farm,
Woodham Ferris, Essex.

RICHARD STRATTON, The Duffryn,
Newport, Mon.

Milk Yield Prizes and Butter Tests.

Awards made on Certificate of the
STEWARD OF DAIRYING.

SHEEP.

Oxford Downs.—*Classes* 216-220.

JOHN BRYAN, Woodside, Southleigh,
Oxon.

JAMES P. CAKE, Binham, Wighton,
Norfolk.

Shropshires.—*Classes* 221-226.

CHARLES COXON, Elford Park, Tam-
worth.

ROBERT F. H. WHITE, Aghavoe,
Ballacolla, Queen's Co., Ireland.

Southdowns.—*Classes* 227-232.

JOHN LANGMEAD, Bailiffs Court,
Olimping, Littlehampton.

JOHN TOMPKINS, Old Place Farm,
Angmering, Worthing.

Hampshire Downs.—*Classes* 233-240.

G. B. ALLEN, Upper Clatford,
Andover.

JOSEPH DEAN, Westwood, Wilton
Road, Salisbury.

Suffolks.—*Classes 211-216.*

J. R. GRIMSEY, St. Helena, Dunwich,
Suffolk

Dorset Downs.—*Classes 217-249.*

ALFRED O. SYMES, Kingston Russell,
Dorchester.

Dorset Horns.—*Classes 250-253*

W. J. CHICK, Stratton, Dorchester.

Eylands.—*Classes 254-257.*

D. J. THOMAS, Talachidu, Brecon.

Kerry Hill (Wales)—

Classes 258 and 259.

T. E. KINSLEY, Wimbury, Chirbury,
Salop.

Lincolns.—*Classes 260-266.*

B. CASSWELL, Pointon House, Folking-
ham.

JOHN JACKSON, Eiton Westwood,
Beverley.

Leicesters.—*Classes 267-270.*

DAVID LINTON, Low Street Brewery,
Bealale, Yorkshire.

Border Leicesters.—*Classes 271-273.*

JAMES JEFFREY, Deuchie, Preston-
kirk.

JAMES WHYTE, Hayston, Glamis,
N.B.

Wensleydales.—*Classes 274-277.*

EDWARD HOWEMAN, Broken Brae
Farm, Richmond, Yorks.

R. H. MILLNER, Mowbrick, West Bank,
Lancaster.

Leons.—*Classes 278 and 279 ; and*

Derbyshire Gritstones.—*Classes 280*
and 281.

SAMUEL LUND, Laycock, Keighley,
Yorkshire.

Kent or Romney Marsh.—

Classes 282-287.

H. M. COBB, Higham, Rochester.

ARTHUR FINN, Westbrook House,
Lydd, Kent.

Otswolds.—*Classes 288-291.*

T. S. TAYLER, Idstone, Shrivenham,
Berkshire.

Devon Long Wools.—*Classes 292-294.*

CHARLES L. HANCOCK, The Manor
House, 'Othalestone, Bishop's
Lydeard.

South Devons.—*Classes 295-299.*

JOHN H. CORNISH, Lower Torr, East
Allington, S.O.

Dartmoors.—*Classes 300-302.*

JOHN MEAD, Coringdon Farm, South
Brent, Devon.

Exmoors.—*Classes 303-305.*

JOHN GAMMIN, Bray Town, High
Bray, South Molton.

Cheviots.—*Classes 306-308.*

WILLIAM MOFFAT, Garwald, Lang-
holm, N.B.

Herdwicks.—*Classes 309 and 310.*

TOM IRVING, Forest Hall, Kendal.

Welsh Mountain.—*Classes 311 and 312.*

R. F. JONES, Hafod, Corwen, North
Wales.

Black-faced Mountain.—

Classes 313 and 314.

TOM IRVING, Forest Hall, Kendal.

PIGS.

Large Whites.—*Classes 315-322.*

Col. F. A. WALKER-JONES, The
Manor House, Burton, Westmor-
land.

Middle Whites.—*Classes 323-328.*

JOHN ANGUS, Whitefield, Morpeth,
Northumberland.

Tamworths.—*Classes 329-334.*

ROBERT IBBOTSON, The Hawthorns,
Knowle, Warwickshire.

Berkshires.—*Classes 335-340.*

Hon. CLAUD B. PORTMAN, Goldicote,
Stratford-on-Avon.

Large Blacks.—*Classes 341-346.*

J. OSCAR MUNTZ, Heathcot, Yelver-
ton, South Devon.

Lincolnshire Curly-coated.—

Classes 347-352.

T. M. CARTWRIGHT, The Villa, Rise-
holme, Lincoln.

POULTRY.

Classes 353-492.

- W. W. BROOMHEAD, Chalfont St. Peter, Bucks.
EDWARD A. CASS, Candlesby House, Burgh R.S.O., Lincolnshire.
J. E. D. MOYSEY, Venton, Totnes, Devon.
HERBERT P. MULLENS, Oaken, Wolverhampton.
O. SNEDDON, Baldersby, Yorkshire.
B. STAINTHORP, Darlington.
CLEM WATSON, Oxhey, Watford.

PRODUCE.

Butter.—Classes 493-500.

- MILES BENSON, Theale, Reading.

Cheese.—Classes 501-510.

- Professor R. J. DRUMMOND, Dairy School, Kilmarnock.
JOHN PAKEMAN, Chellaston, Derby.

Cider and Perry.—Classes 511-518.

- W. J. GRANT, Pentonville, Newport, Mon.
JAMES SLATTER, Paxford, Campden, Glos.

Wool.—Classes 519-527.

- J. T. HADDON, 19, Dale Street, Bradford.

Hives and Honey.—Classes 528-554.

- T. W. COWAN, Upcott House, Taunton.
C. L. M. EALES, The Elms, Tiverton, Devon.
W. F. REID, Field Side, Addlestone, Surrey.
REV. H. G. STANLEY, Marshfield Vicarage, Cardiff.

COMPETITIONS.

Jumping.

- MICHAEL G. LLOYD RAKER, The Cottage, Hardwicke, Gloucester.
F. L. GOOCH, F.R.C.V.S., St. Martin's, Stamford.
F. H. SCHWIND, Badminton Club, Piccadilly, W.

Horse-shoeing.

- BRENNAN DE VINE, F.R.C.V.S., Hollday Street Wharf, Birmingham.
ROBERT VIGAR, A.F.C.L., Towns End, Caterham, Surrey.

Butter-making.

- JOHN BENSON, The Kettering Dairy, Dalkeith Place, Kettering.
Professor R. J. DRUMMOND, Dairy School, Kilmarnock.

FARMS.

Classes 1-5.

- WILLIAM NUNNERLEY, Kenwick, Ellesmere, Shropshire.
T. L. WALKER, Knightwick Manor, Worcester.

FORESTRY.

- ROBERT ANDERSON, Cirencester.
A. T. GILLANDERS, Park Cottage, Alnwick.

PLANTATIONS AND HOME NURSERIES.

- M. C. DUCHESNE, F.S.I., Farnham Common, Slough.
Professor H. A. FRITCHARD, F.S.I., Royal Agricultural College, Cirencester.

HORTICULTURE.

- Rev. A. T. BOSCAWEN, Ludgvan Rectory, Long Rock, R.S.O., Cornwall.
J. H. GOODACRE, V.M.H., Elvaston Castle Gardens, Derby.
A. MACKELLAR, V.M.H., Royal Gardens, Windsor.
THOMAS STEVENSON, Woburn Place Gardens, Addlestone, Surrey.

CHIEF VETERINARY OFFICER.

- JOHN MALCOLM, F.R.C.V.S., Hollday Street Wharf, Birmingham.

VETERINARY INSPECTORS.

- W. J. CADE, M.R.C.V.S., Boar's Head Yard, College Place, Bristol.
Professor J. MACQUEEN, F.R.C.V.S., Royal Veterinary College, Camden Town, London, N.W.
W. STANLEY CARLTON, M.R.C.V.S., The Butts, Worcester.
BRENNAN DE VINE, F.R.C.V.S., Hollday Street Wharf, Birmingham.
F. L. GOOCH, F.R.C.V.S., St. Martin's, Stamford.
W. E. LITT, M.R.C.V.S., St. John's House, Shrewsbury.
R. PORCH, F.R.C.V.S., 1 Richmond Hill, Clifton, Bristol.
W. A. WELCH, M.R.C.V.S., Walcot Street, Bath.

ASSISTANT VETERINARY OFFICER.

- WILLIAM TRIGGER, F.R.C.V.S., Newcastle, Staffs.

AWARDS OF PRIZES AT BRISTOL, 1913.

ABBREVIATIONS.

I., First Prize. II., Second Prize. III., Third Prize. IV., Fourth Prize.
V., Fifth Prize. R. N., Reserve Number. H. C., Highly Commended.

N.B.—The responsibility for the accuracy of the description or pedigree, and for the eligibility to compete of the animals entered in the following classes, rests solely with the Exhibitors.

Unless otherwise stated, each Prize Animal in the Classes for Horses, Cattle, Sheep, and Pigs, was "bred by Exhibitor."

HORSES.

Shires.

No. in
Cata-
logue

Class 1.—*Shire Stallions, foaled in 1912.*¹ [11 entries, 3 absent.]

- 1 I. (£20.)—JOHN C. JACKSON, The Grange, Askern, Doncaster, for Champion's Comrade, bay, bred by D. C. & E. H. Jones, The Bink, Pool Quay, Welshpool; s. Childwick Champion 2215, d. Bonnie Princess 53151 by Normour Statesman 18886.
- 7 II. (£10.)—SIR ARTHUR NICHOLSON, Highfield Hall, Leek, for Leek Dauntless, bay, bred by A. & C. Brake, Dodford Lodge, Weedon; s. Minnis Champion 26182, d. Dodford Queenie 50874 by Lockinge Forest King 18867.
- 8 III. (£5.)—LORD ROTHSCHILD, Tring Park, Herts., for Moulton Nonsuch, brown, bred by A. H. Clark, Moulton Enigate, Spalding; s. Babingley Nulli Secundus 28893 d. Tatton Duchess 62082 by Tatton Dray King 28777.
- 5 R. N. & H. C.—IAN MASSEY, Crumleigh Heath, Little Leigh, Northwich, for Crumleigh Sensation.

Class 2.—*Shire Stallions, foaled in 1911.* [11 entries, 4 absent.]

- 18 I. (£20.)—LORD ROTHSCHILD, Tring Park, Herts., for Tandridge Future King 30884, black, bred by Max Michaels, Tandridge Court, Oxley, Surrey; s. King of Tandridge 24361, d. Wyppanham Mole 53442 by Hendie Champion 18078.
- 13 II. (£10.)—A. GRANDAGE, Bramhope Stud, Monk's Heath, Alderley, Cheshire, for Duke's Double 30385, bay, bred by W. T. Huys, The Langton Manor, Leicester; s. Hulsewood Royal Duke 25255, d. Lang Dray Queen 60899 by Tatton Friar 21953.
- 19 III. (£5.)—LEOPOLD SALOMONS, Norbury Park, Dorking, for Norbury Coronation 30763, bay; s. Norbury Monestrel 23543, d. Ludbore' Royal Lassie 54545 by Lockinge Forest King 18867.
- 20 R. N. & H. C.—SIR BARKLEY G. D. SHEFFIELD, Bt., Nornunby Park, Doncaster, for Flixboro' King.

Class 3.—*Shire Stallions, foaled in 1910.* [10 entries, 1 absent.]

- 28 I. (£20 & Champion.)²—F. W. GRIFFIN, Boro' Fen, Peterborough, for Rowington Dray King 29785, brown, bred by T. Horn, Rowington, Warwick; s. Friar John 24266, d. Darwen Dray Queen 58588 by Drayman 28rd 18551.
- 23 II. (£10 & R. N. for Champion.)²—EDGAR APPLEBY, Avon Lodge, Long Lawford, Rugby, for Royston Forest King 30863, brown, bred by the Exors. of the late O. Eches, Royston Grange, Winster, Matlock Bath; s. Redlynch Forest King 28828, d. Royston Speedwell 58209 by Markenton Special Brand 22572.
- 26 III. (£5.)—JAMES GOULD Crouchley, Lymm, Cheshire, for Snowdon Menestrel 30924, bay, bred by the University College of North Wales, Bangor; s. Birdsall Menestrel 19337, d. Madryn Rosy Morn 57848 by Boro' Conqueror 2nd 18548.
- 30 IV. (£4.)—SIR ARTHUR NICHOLSON, Highfield Hall, Leek, for Tandridge Forester 29924, bay, bred by Max Michaels, Tandridge Court, Oxley; s. Shamrock of Tandridge 25620, d. Yatesbury Fan 52715 by Lockinge Forest King 18867.
- 31 R. N. & H. C.—LORD ROTHSCHILD, Tring Park, Herts., for Minton.

¹ Prizes given by the Shire Horse Society.

² Champion Gold Medal given by the Shire Horse Society for the best Stallion in Classes 1-3.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 4.—Shire Fillies, foaled in 1912. [14 entries, 5 absent.]

- 44 I. (£20.)—THE DUKE OF WESTMINSTER, Eaton Hall, Chester, for Eaton Encores, bay, bred by John Broad, Wallington, Wrothbury, Wrexham; s. Eaton Nunsuch 27301, 7 Bounce 35108 by Hatherthorn 4443.
 46 II. (£10.)—J. G. WILLIAMS, Pendley Manor, Tring, for Pendley Champion's Queen, bay; s. Childwick Champion 22215, d. Pendley Queen 57971 by Luckinge Forest King 18867.
 44 III. (£5.)—THE EXORS. OF THE LATE GEORGE COWING, Yatesbury Manor, Calne, Wilts., for Yatesbury Sunshine, bay, bred by George Cowing; s. Friars Master 27348, d. Creslow Sunlight 58823 by Beuchendon Royal Harold 19335.
 45 IV. (£4.)—W. & H. WHITLEY, Primley Farm, Paignton, for Belchford Queen, bay, bred by A. Chatterton, Belchford, Horncastle; s. Heale Adonis 35273, d. Belchford Duchess 68575 by Ragged Boy 2nd 23700.
 43 R. N. & H. C.—LEOPOLD SALOMONS, Norbury Park, Dorking, for Norbury Sea Gull.

Class 5.—Shire Fillies, foaled in 1911. [7 entries, 2 absent.]

- 50 I. (£20. & R. N. for Champion.)—SIR ARTHUR NICHOLSON, Highfield Hall, Leek, for Leek Dorothy 71405, bay; s. Redlynch Forest King 23626, d. Leek Dainty 51487 by Girtan Meteor 19549.
 53 II. (£10.)—J. G. WILLIAMS, Pendley Manor, Tring, for Garston Surprise 70884, black, bred by G. A. Cobb, Woodside, Girtan, Watford; s. Mimma Champion 26402, d. Belgrave Bladon 50203 by Exton Duke 21411.
 62 III. (£5.)—W. & H. WHITLEY, Primley Farm, Paignton, for Rickford Gem 72188, bay, bred by the Exors. of the late Lord Winter-take, Coombe Lodge, Blagdon; s. King Cole 7th 23651, d. Rickford Dazzle 61641 by Childwick Champion 22215.
 49 R. N. & H. C.—F. E. MUNTZ, Umberslade, Hockley Heath, for Writtle Dray Queen.

Class 6.—Shire Fillies, foaled in 1910. [8 entries, 2 absent.]

- 61 I. (£20. & Champion.)—J. G. WILLIAMS, Pendley Manor, Tring, for Halstead Duchess 7th 67223, bay, bred by John Bradley, Halstead, Tilton, Leicester; s. Redlynch Forest King 23626, d. Halstead Duchess 6th 54035 by Menestrel 14180.
 59 II. (£10.)—SIR BERKELEY G. D. SHEFFIELD, BT., Normanby Park, Doncaster, for Normanby Dewy Morn 68036, bay; s. Childwick Champion 22215, d. Crossmoor 41519 by Crossmoor Carbon 19525.
 57 III. (£5.)—SIR WALPOLE GREENWELL, BT., Marden Park, Woldingham, Surrey, for Tandridge Bracelet 68878, brown, bred by Max Michaelis, Tandridge Court, Oxted; s. Shamrock of Tandridge 25620, d. Fuchsia of Tandridge 53011 by Lockinge Forest King 18867.
 60 R. N. & H. C.—W. & H. WHITLEY, Primley Farm, Paignton, for Sussex Pride 68861.

Class 7.—Shire Mares, foaled in or after 1909, with Foals at foot.

[5 entries, 1 absent.]

- 62 I. (£20.)—JOHN BRADLEY, Halstead, Tilton, Leicester, for Halstead Royal Duchess 68868, bay, foaled in 1909; s. Lockinge Forest King 18867, d. Halstead Duchess 3rd 42127 by Menestrel 14180. [Foal by Rickford Coming King 27700].
 63 II. (£10.)—ROBERT HEATH, Biddulph Grange, Biddulph, Staffs., for Johnson Belle 64058, bay, foaled in 1909, bred by W. Mont, Johnson Hall, Ercall, Staffs.; s. Dunsmore Rattler 21367, d. Danesfield Juliet 28306 by Traitor 15401. [Foal by Rickford Coming King 27709].
 64 III. (£5.)—THOMAS JONES, Quarry Farm, Goldstone, Surrey, for Chatley Rose 63196, bay, foaled in 1909, bred by Mrs. S. F. Bourne, Norton St. Philip, Bristol; s. Amberley Baronet 24892, d. Rickford Daisy 37032 by Calwich Prince 15531. [Foal by Ansty Forest King 28085].
 66 R. N. & H. C.—CHARLES MORRIS, Highfield Hall, St. Albans, for Tandridge Gem.

Class 8.—Shire Mares, foaled in or before 1908, with Foals at foot.

[11 entries, 2 absent.]

- 68 I. (£20.)—SIR WALPOLE GREENWELL, BT., Marden Park, Woldingham, Surrey, for Marden Peach 54007, bay, foaled in 1906; s. Lockinge Forest King 18867, d. Marden Pride 48698 by Codnor Harold 17266. [Foal by Norbury Menestrel 23543].
 76 II. (£10.)—W. & H. WHITLEY, Primley Farm, Paignton, for Mollington Movement 48793, bay, foaled in 1904, bred by C. R. Bruce Frv, Mollington, Banbury; s. Lockinge Forest King 18867, d. Oatthorpe Malmalson 16869 by Cronton Magna Charta 9165. [Foal by Childwick Champion 22215].
 73 III. (£5.)—LORD ROTHCHILD, Tring Park, Herts., for Lilleshall Countess 57540, bay, foaled in 1907, bred by the Duke of Sutherland, K.G., Lilleshall, Newport, Salop; s. Dunsmore Jameson 15972, d. Lilleshall Moss Rose 42713 by Markenton Royal Harold 15225. [Foal by Babingley Nulli Secundus 26098].
 74 R. N. & H. C.—SIR BERKELEY G. D. SHEFFIELD, BT., Normanby Park, Doncaster, for Lady Forester.

¹ Champion Gold Medal given by the Shire Horse Society for the best Mare or Filly in Classes 4-8.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 9.—Shire Colt Foals, the produce of Mares entered in Classes 7 or 8.

[6 entries, none absent.]

- 80 I. (£10.)—**SIR BERKELEY G. D. SHEFFIELD, BT.**, Normanby Park, Doncaster, for bay, foaled March 14; s. Slipton King 20092, d. Lady Forester 54381 by Lockinge Forest King 18867.
- 83 II. (£5.)—**J. G. WILLIAMS**, Pendley Manor, Tring, for Pendley Menestrel bay, foaled March 10; s. Norbury Menestrel 23513, d. Pendley Lady Mayores, 61470 by Lockinge Forest King 18867.
- 79 III. (£3.)—**J. E. & A. W. POTTER**, Tarnacre House, Gurstang, for bay, foaled Feb. 18; s. Lunsdale Kingmaker 23168, d. Champion's Choice 59769 by Childwick Champion 22216.
- 82 **R. N. & H. C.—W. & H. WHITLEY**, Primley Farm, Paignton

Class 10.—Shire Filly Foals, the produce of Mares entered in Classes 7 or 8.

[10 entries, 4 absent.]

- 91 I. (£10.)—**LORD ROTHSCHILD**, Tring Park, Hert., for bay, foaled March 28; s. Babington Null Secundus 28903, d. Lilleshall Countess 57540 by Dunmore Jamieson 17973.
- 88 II. (£5.)—**ROBERT HEATH**, Biddulph Grange, Biddulph, Staffs., for black, foaled Feb. 22; s. Rickford Coming King 27700, d. Johnson Bello 61050 by Dunmore Raider 21367.
- 84 III. (£3.)—**JOHN BRADLEY**, Halstead, Tilton, Leicester, foaled April 20; s. Rickford Coming King 27700, d. Halstead Royal Duchess 63853 by Lockinge Forest King 18867.
- 88 **R. N. & H. C.—THOMAS JONES**, Quarry Farm, Godstone, Surrey

Clydesdales.¹

Class 11.—Clydesdale Stallions, foaled in 1912. [6 entries, 2 absent]

- 94 I. (£20, & **R. N. for Champion.**)—**ROBERT BRYDON**, The Dene, Seaham Harbour, for Philippine (vol. 35, p. 642), bay, bred by J. G. Philips, The Baggrah, Low Row, Carlisle; s. Bonnie Buchlyvie 14032, d. Denton Lady 83569 by Royal Bounty 10873.
- 98 II. (£10.)—**A. & W. MONTGOMERY**, Netherhall and Banks, Kirkcudbright, for black, bred by George W. Cowie, Easterbo, Turriff; s. Everlasting 11831, d. Oress 16997 by Darnley Hero 5697.
- 95 III. (£5.)—**W. DUNLOP**, Dunure Main, Ayr, for Dunure Footmark (vol. 35, p. 111), brown, bred by John Leckie, Inchwood, Campsie; s. Dunure Footprint 15203, d. Kaur Bellona 23908 by Hawatha 10067.
- 97 **R. N. & H. C.—MRS. LITTLE**, Moss Side, Crosby-on-Eden, Carlisle, for Burgies Favourite.

Class 12.—Clydesdale Stallions, foaled in 1911. [4 entries, 1 absent.]

- 102 I. (£20.) **A. & W. MONTGOMERY**, Netherhall and Banks, Kirkcudbright, for Baron Signet 17010, bay, bred by J. Ernest Kerr, Harviestoun Castle, Dollar; s. Baron's Pride 9122, d. Nellie of Harviestoun 16782 by Royal Favourite 10630.
- 101 II. (£10.)—**W. DUNLOP**, Dunure Main, Ayr, for Dunure Stephen (vol. 34, p. 163), bay, bred by Stephen Mitchell, Boquhan, Kippen Station; s. Baron of Buchlyvie 11203, d. Minnowawa 21620 by Hawatha 10067.
- 103 III. (£5.) **A. & W. MONTGOMERY**, for Glencaple (vol. 34, p. 89), bay, bred by D. P. Elliot, Nimble Hill, Duns; s. Sam Black 14348, d. Baron's Beauty 23649 by Baron's Pride 9123.

Class 13.—Clydesdale Stallions, foaled in 1910. [7 entries, 4 absent.]

- 106 I. (£20, & **Champion.**)—**W. DUNLOP**, Dunure Main, Ayr, for The Dunure 16839, brown, bred by J. & T. Robertson, Glendrie, Kirkcolum; s. Baron of Buchlyvie 11203, d. Carina 2nd 16323 by Hawatha 10067.
- 110 II. (£10.)—**F. SAINSBURY**, Blunts Hall, Little Wratting, Haverhill, Suffolk, for Invicta 16844, brown, bred by T. Newbitt, Abington Grange, Cambs.; s. Harviestoun Baron 14156, d. Snowdrop 26997 by Cairndale 13394.

Class 14.—Clydesdale Fillies, foaled in 1912. [7 entries, 1 absent.]

- 111 I. (£20.)—**ANDREW BROOKS**, North Elphinstone, Tranent, for Lady Betty (vol. 35, p. 25), light bay; s. Apukwa 14567, d. Bet of Boquhan 28998 by Baron's Pride 9122.
- 117 II. (£10.)—**STEPHEN MITCHELL**, Boquhan, Kippen Station, for Boquhan Lady Margaret (vol. 35, p. 615), black; s. Dunure Footprint 15203, d. Boquhan Lady Peggy 83395 by Hawatha 10067.
- 115 III. (£5.)—**J. E. KERR**, Harviestoun Castle, Dollar, for brown, bred by J. Scott, Newtyle; s. Royal Guest 15363, d. Kimpurney 27141 by Baron's Best 11597.
- 118 **R. N. & H. C.—W. DUNLOP**, Dunure Main, Ayr, for Dunure Glad Eye.

¹ £50 towards these Prizes were given by the Clydesdale Horse Society.

² Champion Prize of £10 given by the Clydesdale Horse Society for the best Stallion in Classes 11-13.

lvi *Award of Live Stock Prizes at Bristol, 1913.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 15.—*Clydesdale Fillies, foaled in 1911.* [4 entries.]

- 119 I. (£20.)—W. DUNLOP, Dumure Mains, Ayr, for Dunure Chosen (vol. 34, p. 65), brown; s. Baron of Buchlyvie 11283, d. Dunure Ideal 21283 by Auchenflower 12007.
 120 II. (£10.)—W. DUNLOP, for Dunure Toby (vol. 34, p. 61), bay, bred by Mr. Hunter Weston, Hunterston, West Kilbride; s. Baron of Buchlyvie 11283, d. Toppy of Hunterston 20774 by Sir Hugo 10924.
 118 III. (£5.)—ROBERT BRYDON, The Dene, Seaham Harbour, for Silver Bangle (vol. 34, p. 31), brown; s. Bonnie Buchlyvie 14033, d. Syringa 26129 by Silver Cup 11184.
 121 R. N. & H. C.—J. E. KERR, Harviestoun Castle, Dollar, for Harviestoun Aline.

Class 16.—*Clydesdale Fillies, foaled in 1910.* [3 entries, 1 absent.]

- 124 I. (£20, & Champion.¹)—STEPHEN MITCHELL, Boquhan, Kippen Station, for Nannie (vol. 33, p. 81), bay, bred by James Gray, Birkenwood, Gargunnoch; s. Apukwa 14567, d. Lady Jane 19569 by Balmadie Queen's Guard 10960.

Class 17.—*Clydesdale Mares with Foals at foot.* [5 entries, 2 absent.]

- 127 I. (£20, & R.N. for Champion.¹)—J. & W. MEIKLEM, Begg, Kirkcaldy, for Myrene, bay, foaled in 1908, bred by Messrs. Walder, Muircleugh, Lauder; s. Baron of Buchlyvie 11283, d. Muircleugh Belle 18447 by Montrave Mac 9958. [Foal by The Dunure 18839.]
 125 II. (£10.)—ROBERT BRYDON, The Dene, Seaham Harbour, for Silver Queen (vol. 31, p. 193), bay, foaled in 1908, bred by the Seaham Harbour Stud Company, Seaham Harbour; s. Silver Cup 11184, d. Seaham Queen by Lord Stewart 10084. [Foal by Bonnie Buchlyvie 14033.]

Class 18.—*Clydesdale Foals, the produce of Mares entered in Class 17.*

[4 entries, 1 absent.]

- 132 I. (£10.)—J. & W. MEIKLEM, Begg, Kirkcaldy, for bay filly, foaled May 16; s. The Dunure 16839, d. Myrene by Baron of Buchlyvie 11283.
 130 II. (£5.)—ROBERT BRYDON, The Dene, Seaham Harbour, for bay filly, foaled April 13; s. Bonnie Buchlyvie 14033, d. Silver Queen (vol. 36) by Silver Cup 11184.
 133 III. (£3.)—STEPHEN MITCHELL, Boquhan, Kippen Station, for brown colt, foaled April 26; s. Apukwa 14567, d. Boquhan Lucy (vol. 31, p. 74) by Baden Powell 10963.

Suffolks.²

Class 19.—*Suffolk Stallions, foaled in 1912.* [5 entries, 1 absent.]

- 135 I. (£20.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Aristocrat 4153; s. Sudbourne Arabi 3287, d. Sudbourne Mermaid 6012 by Sudbourne Sunshine 2734.
 136 II. (£10.)—ARTHUR T. PRATT, Morston Hall, Trimley, Ipswich, for Morston Howe 4193, bred by R. G. Pretyman, M.P., Orwell Park, Ipswich; s. Mazeppa 3430, d. Molly 6282 by Sutton 3266.
 134 III. (£5.)—RAYMOND J. CATCHPOLE, Darsham Hall, Darsham, Suffolk, for Darsham Goldmaker, bred by C. Self, Laxfield; s. Rendlesham Goldsmith 3065, d. Moggie 7189 by Stradbroke Farmer 2145.
 138 R. N. & H. C.—SIR CUTHBERT QUILTER, BT., M.P., Methergate Hall, Woodbridge, for Bawdsey Sweetheart.

Class 20.—*Suffolk Stallions, foaled in 1911.* [6 entries, 1 absent.]

- 140 I. (£20, & R. N. for Champion.³)—KENNETH M. CLARK, Sudbourne Hall, Orford, for Sudbourne Red Cup 4013; s. Dennington Cupbearer 3086, d. Sudbourne Red Queen 6554 by Sudbourne Count 3257.
 141 II. (£10.)—ARTHUR T. PRATT, Morston Hall, Trimley, Ipswich, for Morston Earl Camden 4184, bred by Mr. Hart, Ipswich; s. Neptune 3005, d. Gipsy by Windor Chiotain 2025.
 143 III. (£5.)—SIR CUTHBERT QUILTER, BT., M.P., Methergate Hall, Woodbridge, for Bawdsey Sickelman 4023, bred by the late Sir Cuthbert Quilter, BT., Bawdsey Manor; s. Bawdsey Harvester 3076, d. Bawdsey Sunshine 6281 by Conquest 2392.
 139 R. N. & H. C.—RAYMOND J. CATCHPOLE, Darsham Hall, Darsham, for Darsham Minstrel Boy.

Class 21.—*Suffolk Stallions, foaled in 1910.* [4 entries, none absent.]

- 148 I. (£20, & Champion.³)—SIR CUTHBERT QUILTER, BT., M.P., Methergate Hall, Woodbridge, for Bawdsey Harvest King 3879 bred by the late Sir Cuthbert Quilter, BT., Bawdsey Manor; s. Bawdsey Harvester 3076, d. Bawdsey Marguerite 3783 by Eclipse 2627.

¹ Champion prize of £10 given by the Clydesdale Horse Society for the best Mare or Filly in Classes 14–17.

² £50 towards these Prizes were given by the Suffolk Horse Society.

³ "Coronation" Challenge Cup given by the Suffolk Horse Society for the best Stallion in Classes 19–21.

Award of Live Stock Prizes at Bristol, 1913. lvii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 140 II. (£10).—KENNETH M. CLARK, Sudbourne Hall, Orford, for Sudbourne Aerolite 3902, s. Sudbourne Arabi 3287, d. Sudbourne Daylight 5924 by Dennington Cup Bearer 3086.
- 145 III. (£5).—RAYMOND J. CATCHPOLE, Darsham Hall, Darsham, for Darsham Onyx 4123, bred by A. Roper, Leiston; s. Worcester 2279, d. Opal 3911 by Eclipse 2627.

Class 22.—Suffolk Fillies, foaled in 1912. [4 entries.]

- 140 I. (£20).—KENNETH M. CLARK, Sudbourne Hall, Orford, for Sudbourne Laurel 7668; s. Sudbourne Arabi 3287, d. Sudbourne Laura 6027 by Sunshine 2734.
- 151 II. (£10).—SIR OUTHBERT QUILTER, BT, M.P., Methergate Hall, Woodbridge, for Bawdsey Chieftainess 7453; s. Bawdsey Laddie 3037, d. Bawdsey Jewel 6485 by Sudbourne Count 3257.
- 152 III. (£5).—SIR OUTHBERT QUILTER, BT, M.P., for Bawdsey Goddess 7454; s. Bawdsey Marshal Ney 8385, d. Bawdsey Minerva 6449 by Bawdsey Harvester 8076.
- 150 R. N. & H. C.—ARTHUR T. PRATT, Morston Hall, Trimley, Ipswich, for Morston Harvest Beauty.

Class 23.—Suffolk Fillies, foaled in 1911. [4 entries.]

- 153 I. (£20).—KENNETH M. CLARK, Sudbourne Hall, Orford, for Sudbourne Merrilass 7218; s. Dennington Cup Bearer 3086, d. Sudbourne Mermaid 6012 by Sunshine 2734.
- 155 II. (£10).—KENNETH M. CLARK, for Sudbourne Twilight 7419; s. Sudbourne Arabi 3287, d. Sudbourne Daylight 5924 by Dennington Cup Bearer 3086.
- 156 III. (£5).—SIR OUTHBERT QUILTER, BT, M.P., Methergate Hall, Woodbridge, for Bawdsey China Doll 2nd 7252, bred by the late Sir Outhbert Quilter, BT., Bawdsey Manor; s. Bentley War Cry 3028, d. Bawdsey Wax Doll 4493 by Bawdsey Harvester 8076.
- 154 R. N. & H. C.—KENNETH M. CLARK, for Sudbourne Peach.

Class 24.—Suffolk Fillies, foaled in 1910. [4 entries.]

- 150 I. (£20).—SIR OUTHBERT QUILTER, BT, M.P., Methergate Hall, Woodbridge, for Bawdsey Bloom 7034, bred by the late Sir Outhbert Quilter, BT, Bawdsey Manor; s. Bawdsey Harvester 3076, d. Ramsholt Blossom 8718 by Prince Arthur 2268.
- 157 II. (£10).—KENNETH M. CLARK, Sudbourne Hall, Orford, for Sudbourne Abbess 7668; s. Sudbourne Arabi 3287, d. Sudbourne Bessie 5501 by Dimple Dick 2497.
- 158 III. (£5).—KENNETH M. CLARK, for Sudbourne Connie 6922; s. Worcester 2279, d. Sudbourne Council 6438 by Carthusian 2275.
- 150 R. N. & H. C.—SIR OUTHBERT QUILTER, BT, M.P., for Bawdsey Statuette.

Class 25.—Suffolk Mares, with Foals at foot. [3 entries, none absent.]

- 162 I. (£20).—KENNETH M. CLARK, Sudbourne Hall, Orford, for Sudbourne Diamond 6604, foaled in 1907, bred by the Rev. A. Maude, Badwell Ash, Bury St. Edmunds; s. War Cry 3028, d. Badwell Depper 5724 by Tatler 2311. [Foal by Sudbourne Arabi 3287.]
- 163 II. (£10).—SIR OUTHBERT QUILTER, BT, M.P., Methergate Hall, Woodbridge, for Bawdsey Minerva 6449, foaled in 1904, bred by the late Sir Outhbert Quilter, BT, Bawdsey Manor; s. Bawdsey Harvester 3076, d. Sutton Venus 5698 by Mars 2424. [Foal by Bawdsey Marshal Ney 8385.]

Class 26.—Suffolk Foals, the produce of Mares entered in Class 25. [3 entries.]

- 165 I. (£10).—KENNETH M. CLARK, Sudbourne Hall, Orford, for colt foal, foaled January 16; s. Sudbourne Arabi 3287, d. Sudbourne Diamond 6004 by War Cry 3028.
- 164 II. (£5).—KENNETH M. CLARK, for colt foal, foaled February 6; s. Sudbourne Arabi 3287, d. Sudbourne Cowspan 6401 by Sudbourne Sunshine 3374.
- 166 III. (£3).—SIR OUTHBERT QUILTER, BT, M.P., Methergate Hall, Woodbridge, for filly foal, foaled February 27; s. Bawdsey Marshal Ney 8385, d. Bawdsey Minerva 6449 by Bawdsey Harvester 8076.

Hunters.¹

Class 27.—Thoroughbred Colts, foaled in 1912, entered or eligible for entry in the General Stud Book, likely to make Hunter Stallions. [1 entry.]

[No award.]

Class 28.—Hunter Colts or Geldings, foaled in 1912. [8 entries, none absent.]

- 171 I. (£20).—HENRY JOHN DAVIS, North Wootton, Shepton Mallet, for Arable, brown colt; s. Rundsgair (vol. 21, p. 600 G.S.B.) & Polly.
- 172 II. (£10).—J. J. E. FARQUHARSON, Sutton Bingham, Yeovil, for Algiers, bay colt, bred by W. Oorry, Over Compton, Sherborne; s. Rundsgair (vol. 21, p. 600 G.S.B.), d. Alice E. 4498 by Glory Smitten.

¹ £100 and £80 towards these Prizes were given by two Members of the R.A.S.E. interested in the breeding of Hunters.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 168 III. (£5.)—WILLIAM L. BARTON, Minor Farm, Coin St Aldwyn, Farnford, for Thistle, chestnut colt; s. Thrifledown (Supp. 140), d. Santoy.
175 R. N. & H. C.—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for Bay Eagle.

Class 29.—*Hunter Geldings, foaled in 1911.* [8 entries, 1 absent.]

- 178 I. (£20.)—J. J. F. FARQUHARSON, Sutton Bingham, Yeovil, for Robin E, chestnut, bred by W. Corry, Ower Compton, Sherborne; s. Battlement (vol. 19, p. 294 G.S.B.), d. Alice R 4498 by Glory Smitten.
183 II. (£10.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for Sportsman, bay, bred by J. C. Toppin Skelton Hall, Penrith; s. Idle (vol. 17, p. 649 G.S.B.)
182 III. (£5.)—FRANCIS SAMUELSON, Breckenbrough Hall, Thirsk, for Rathdrum, (Supp. 182), bay; s. Drummer Kelly, d. Mulligan Junior 3954 by Trundle Hill.
176 R. N. & H. C.—C. LESLIE BLEW, Hillfields, Redmarley, Gloucester, for Ortelan.

Class 30.—*Hunter Geldings, foaled in 1910.* [10 entries, 3 absent.]
192 I. (£20.)—ARTHUR SOWLER, The Warren, Finnera, Buckingham, for The Colonel, bay, bred by P. Burnett, Picksharp House Bird-all, Malton, York; s. Wales (vol. 18, p. 834 G.S.B.), d. by Hackwood.
188 II. (£10.)—CAPTAIN W. P. JEFFCOCK, West Common, Harpenden, for Hawthorne, grey, bred by F. E. Bowser, Wigtoft, Boston; s. Splendour (vol. 21, p. 229 G.S.B.), d. Snowdrop 8rd 4494.
190 III. (£5.)—FRANK J. MERSON & SON, Farningdon, North Peterborough, Bridgwater for Mischief, bay; s. Remus (vol. 18, p. 696 G.S.B.), d. Irish Molly.

- 191 R. N. & H. C.—R. R. PHILLIPS, Tyn-y-Brwyn, Coedkernaw, Newport, Mon., for Pancake.
Class 31.—*Hunter Fillies, foaled in 1912.* [12 entries, 3 absent.]
199 I. (£20.)—E. W. GOLDSWORTHY, Yaldham Manor, Keming, Sevenoaks, for Beryl 8rd 4494, bay; s. Hanover Square (vol. 20, p. 748 G.S.B.), d. Diamond 3385 by Egglamore.
201 II. (£10.)—FRANCIS SAMUELSON, Breckenbrough Hall Thirsk, for Patience, chestnut; s. Drummer Kelly (vol. 20, p. 89 G.S.B.), d. Mulligan Junior 3704 by Trundle Hill.
203 III. (£5.)—WILLIAM H. SHIERS, The Red House, Hartford, Cheshire, for The Bride 8rd 4404, chestnut; s. Blunder (vol. 21, p. 269 G.S.B.), d. Nuphal 3611 by Nunthorpe.
194 IV. (£4.)—CAPTAIN OLIVE BEHRENS, Swinton Grange, Malton, for Sylvia 4th 4472, chestnut; s. Berrill (vol. 18, p. 736 G.S.B.), d. Selby 3714 by Selby (vol. 15, p. 357 G.S.B.)
198 R. N. & H. C.—GEORGE E. GIBSON, M.R.O.V.S., Highfield House, Oakham, for Miss Willow.

Class 32.—*Hunter Fillies, foaled in 1911.* [6 entries, none absent.]
206 I. (£20.)—CAPTAIN OLIVE BEHRENS, Swinton Grange, Malton, for Sunflower 3rd 4109, chestnut; s. Stickup (vol. 21, p. 839 G.S.B.), d. Whinflower 3801 by The Hero.
210 II. (£10.)—J. L. NICKISSON, Hinton Manor, Swindon, for Red Squaw 4313, chestnut; s. Red Sahib (vol. 18, p. 779 G.S.B.), d. Sister Anne 3724 by Pantomime (vol. 17, p. 699 G.S.B.).
211 III. (£5.)—MRS. A. R. POOLE, King's Hill, Dursley, for Psyche 4312, brown; s. Battlement (vol. 19, p. 294 G.S.B.), d. Pamela 3616 by Pantomime (vol. 17, p. 690 G.S.B.)
208 R. N. & H. C.—SIR MERRICK R. BURRELL, BT., Knepp Castle, Horsham, for Coronation 2nd.

- Class 33.—*Hunter Fillies, foaled in 1910.* [5 entries, 1 absent.]
212 I. (£20. & Champion.)—CAPTAIN OLIVE BEHRENS, Swinton Grange, Malton, for Heather 3rd 4108, brown; s. Scotch Sign (vol. 21, p. 497 G.S.B.), d. Whinflower 3801 by The Hero.
216 II. (£10. & R. N. for Champion.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for Better Still 495, brown, bred by R. C. Morgan, North Grimston, Yorks; s. Scotch Sign (vol. 21, p. 497 G.S.B.), d. Betty 1308 by Gordon.
213 III. (£5.)—A. M. FRY, 8 Lion Hill, Clifton, Bristol, for brown filly; s. Akbar (vol. 20, p. 897 G.S.B.), d. Marion by Marion.
214 R. N. & H. C.—GEORGE A. GIBBS, M.P., Tyntesfield, Bristol, for Diana.

Class 34.—*Thoroughbred Mares, entered or eligible for entry in the General Stud Book, with Foals at foot, up to weight.* [5 entries, 1 absent.]
219 I. (£20, R.N. for Champion² & S.P.³)—JOHN A. MULLENS, Barrow Hill, Longcross, Surrey, for Beatrix 4402, bay, foaled in 1901, bred by Mr. Cameron; s. Bushey Park (vol. 17, p. 602 G.S.B.), d. Magnet by Florian. [Filly foal by Dundreary.]

¹ Champion Gold Medal given by the Hunters' Improvement and National Light Horse Breeding Society for the best Filly not exceeding three years old, in Classes 31-33, which is registered in the Hunter Stud Book, or whose entry was tendered within a month of the Award.

² Champion Gold Medal given by the Hunters' Improvement and National Light Horse Breeding Society for the best Mare, four years and upwards, in Classes 34-38, which is registered in the Hunter Stud Book, or whose entry was tendered within a month of the Award.

³ Two Special Prizes of £5 were given for the best Colt and the best Filly Foals.

Award of Live Stock Prizes at Bristol, 1913. lix

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 221 II. (£10).—WILLIAM H. SMITHS, The Red House, Hartford, Cheshire, for Nuptial 3811 (vol. 20, p. 403 G.S.B.), bay, foaled in 1902, bred by S. Nevins Bankart, Hutton II. II. Uppingham; s. Nunthorpe (vol. 15, p. 315 G.S.B.), d. Katberg (vol. 18, p. 581 (i s.B.) by Donovan. [Colt foal by Just Cause.]
- 218 III. (£5, & S. P.).—LORD MIDDLETON, Bird-all, Melton, for Modwena 3175, bay, foaled in 1905; s. Wales (vol. 18, p. 854 G.S.B.), d. Madame Modjeska by Gordon. [Colt foal by Proudridge.]
- 217 R. N. & H. C.—SIR WALTER GILBEY, Bart., Elvenham Hall, Essex, for White Robe.

Class 35.—Hunter Mares (Novice), foaled in or after 1905, with Foals at foot, up to from 12 to 14 stone. [4 entries.]

- 222 I. (£20).—ARTHUR S. BOWLEY, Gilston Park, Harlow, for First Choice 2nd 3842, brown, foaled in 1905, bred by Mr. Stuckey, North Weald, Essex; s. Ohoson (vol. 18, p. 559 G.S.B.). [Foal by Fighting Priest (vol. 21, p. 702 G.S.B.).]
- 225 II. (£10).—W. H. PARTRIDGE, Vernons, Chappel, Essex, for Miss Gibbs, foaled in 1905, bred by Sir R. Hermon Hodge, Burt; s. Kowloon (vol. 18, p. 1005 G.S.B.) by Science. [Foal by Musterman Ready.]
- 223 III. (£5).—E. W. GOLDSWORTHY, Yaldham Manor, Kemling, Sevenoaks, for Turquoise 2nd 3788 chestnut, foaled in 1909 bred by the late Maj.-Gen. Goldsworthy, O.B., Yaldham Manor; s. Rightful, d. Diamond 3365 by Glamore. [Foal by Hanover Square (vol. 20, p. 748 G.S.B.).]
- 224 R. N. & H. C.—MRS. LEATHAM, The Manor, Bagendon, Cirencester, for Nona.

Class 36.—Hunter Mares (Novice), foaled in or after 1905, with Foals at foot, up to more than 14 stone. [3 entries, 2 absent.]

- 227 I. (£20).—MAJOR H. G. HENDERSON, M.P., Kitemore, Farningdon, for Hall Mark 4800, brown, foaled in 1907; s. St Ambulo, d. by Peppermint. [Foal by Erlanger (vol. 21, p. 600 G.S.B.).]

Class 37.—Hunter Mares with Foals at foot, up to from 12 to 14 stone. [11 entries, 4 absent.]

- 229 I. (£20 & Champion*).—WILLIAM H. SMITHS, The Red House, Hartford, Cheshire, for Beechnut 2nd 3284, dark bay, foaled in 1901. [Foal by Red Sahib (vol. 19, p. 779 G.S.B.).]
- 240 II. (£10).—J. HAROLD WATSON, Green Hill, Kidderminster, for Pamela 3616, dark brown, foaled in 1903, bred by E. Benson, Cottestock Farm, Dorchester; s. Pantomime (vol. 17, p. 699 G.S.B.). [Foal by Thistle-down (Supp. 140).]
- 238 III. (£5).—ERNEST W. ROBINSON, Litcombe, Leighton Buzzard, for Partridge 2nd 3618, chestnut, aged, bred by Edward Dempsey, Ballytorney, Mullinavat, Co. Kilkenny; s. Young Marion (vol. 17, p. 941 G.S.B.), & Foal by Lord Baglan. [Foal by Red Sahib (vol. 19, p. 779 G.S.B.).]
- 229 IV. (£4).—SIR MERRIK R. BURRELL, Bt., Knepp Castle, Horsham, for Surprise 3014, bay brown, foaled in 1902, bred by Lt.-Col. Z. Walker, Acock's Green; s. Silver King 34, d. My Treasure by Hidden Treasure [Foal by Denis Richard (vol. 19, p. 821 (i s.B.).]
- 237 R. N. & H. C.—EDMUND P. NORTHEY, Higher Bowden, Okehampton, for Dispute.

Class 38.—Hunter Mares with Foals at foot, up to more than 14 stone. [2 entries.]

- 243 I. (£20).—SIR MERRIK R. BURRELL, Bt., Knepp Castle Horsham, for Casual 4080, bay, foaled in 1901, bred by the Earl of Lonsdale, Barleythorpe, Oakham; s. Castle-nock, d. Sister Mary 3005 by Brown Prince. [Foal by Hanover Square (vol. 20, p. 748 G.S.B.).]
- 241 II. (£10).—MRS. H. D. GREENE, Grove, Craven Arms, Salop, for Stormy Petrel 2nd 4180, dark brown, foaled in 1905, bred by R. G. Garden, Carrug-na-Greina, Dalkey, Co. Dublin; s. Faute de Mieux (vol. 18, p. 537 G.S.B.), d. Wild Duck 5081 by King Otto (vol. 19, p. 700 G.S.B.). [Foal by Red Sahib (vol. 19, p. 779 G.S.B.).]

Class 39.—Hunter Colt Foals, the produce of Mares entered in Classes 35 to 38. [12 entries, 3 absent.]

- 256 I. (£10).—JOHN WILLIAMS, Ethindonwisa, Mydrim, St. Clears, for Gold Seeker, chestnut, foaled May 3; s. Lousby (vol. 21, p. 385 G.S.B.), d. Miss Buckley 3570 by Walmgate (vol. 17, p. 215 G.S.B.).
- 246 II. (£5).—SIR MERRIK R. BURRELL, Bt., Knepp Castle, Horsham, for bay, foaled Jan. 28; s. Denis Richard (vol. 19, p. 821 G.S.B.), d. Surprise 3014 by Silver King 34.

* Two Special Prizes of £5 were given for the best Colt and the best Filly Foals.

† Champion Gold Medal given by the Hunters Improvement and National Light Horse Breeding Society for the best Mare, four years and upwards, in Classes 34-38, which is registered in the Hunter Stud Book, or whose entry was tendered within a month of the Award.

1x *Award of Live Stock Prizes at Bristol, 1913.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

254 III. (£3.)—J. HAROLD WATSON, Green Hill, Kidderminster, for Wisdom, brown, foaled April 16; s. Thistledown (Supp. 140), d. Pamela 3616 by Pantomime (vol. 17, p. 609 G.S.B.).

249 R. N. & H. C.—J. J. E. FARQUHARSON, Sutton Bingham, Yeovil, for Ralene.

Class 40.—*Hunter Filly Foals, the produce of Mares entered in Classes 35 to 38.*
[6 entries, 1 absent.]

261 I. (£10.)—WILLIAM H. SHIERS, The Red House, Hartford, Cheshire, for bay, foaled April 7; s. Red Sahib (vol. 19, p. 779 G.S.B.), d. Beechnut 2nd 3284.

260 II. (£5.)—EDMUND P. NORTHEY, Higher Bowden, Okehampton, for Dab Chick, bay, foaled April 25; s. Golden Petrel (vol. 21, p. 302 G.S.B.), d. Dispute 3883.

259 III. (£3.)—LIEUT.-COL. FRANK HENRY, Elmestree, Tetbury, for brown, foaled May 16; s. Thistledown (Supp. 140), d. Dinah by Deeside.

257 R. N. & H. C.—THE MARCHIONESS OF DOWNSHIRE, Easthampstead Park, Wokingham.

Polo and Riding Ponies.¹

Class 41.—*Polo and Riding Pony Stallions, foaled in or before 1910, not exceeding 15 hands.* [6 entries, none absent.]

266 I. (£15, & Champion.²)—THE KEYNSHAM STUD COMPANY, LTD., Keynsham, Bristol, for White Wings 464, dark chestnut, foaled in 1906, bred by the Radnorshire Polo and Riding Pony Co., Ltd., Bledfa, Llanguillo; s. White Mask 190, d. First Flight 615 by Balquhider.

267 II. (£10, & R. N. for Champion.²)—STEPHEN MUMFORD, Stud Farm, Moreton Morrell, Warwick, for Spanish Hero 572, dark brown, foaled 1898, bred by J. W. Mossenthal, Stony Stratford; s. Kilwarlin, d. Spanish Maiden by Merry Hampton.

263 III. (£5.)—SIR JOHN BARKER, BT., The Grange, Bishop's Stortford, for Bawdon, chestnut, foaled in 1909, bred by W. O. Elsey, Baumber House, Baumber, Horn-castle; s. Galashiels, d. Othery by King Monmouth.

268 R. N. & H. C.—C. HOWARD TAYLOR, Hampole Priory, near Doncaster for Field Marshal 513.

Class 42.—*Polo and Riding Pony Colts, Fillies, or Geldings, foaled in 1912.*
[8 entries, 2 absent.]

273 I. (£15.)—H. FAUDEL-PHILLIPS, Mapleton Stud, Edenbridge, for Ulster Day (Supp. 1912), chestnut colt; s. New Year's Gown (Supp. 1908-10), d. Shamrock.

275 II. (£10.)—TRESHAM GILBEY, Whitehall, Bishop's Stortford, for Forward Girlie, bay filly; s. Right For'ard, d. Good Girl.

269 III. (£5.)—JOHN S. BAKEWELL, Cromhall, Charlfield, Glos, for Liverwing (Supp. 1913), chestnut colt; s. White Wings 464, d. Gwen 2350 by Athol Duke.

271 R. N. & H. C.—SIR JOHN BARKER, BT., The Grange, Bishop's Stortford, for Sun-shine 2nd.

Class 43.—*Polo and Riding Pony Colts, Fillies, or Geldings, foaled in 1911.*
[9 entries, none absent.]

277 I. (£15, & R. N. for Champion.²)—JOHN S. BAKEWELL, Cromhall, Charlfield, Glos, for Flu (Supp. 1912), chestnut filly; s. White Wings 464, d. Snuffies 2167.

264 II. (£10.)—J. OSCAR MUNTZ, Heathcot, Yelverton, Devon, for The Buzzar, bay gelding, bred by Tresham Gilbey, Whitehall, Bishop's Stortford; s. Right For'ard 368, d. My Honey by Senanus.

262 III. (£5.)—TRESHAM GILBEY, Whitehall, Bishop's Stortford, for Merry Morn (Supp. 1913), bay filly; s. Merry Matchmaker, d. Coming Dawn (Supp. 1908) by Mark For'ard.

260 R. N. & H. C.—J. E. WILLIS FLEMING, Chilworth Manor Stud, Romsey, Hants, for Coronation.

Class 44.—*Polo and Riding Pony Fillies or Geldings, foaled in 1910.*

[8 entries, none absent.]

266 I. (£15.)—SIR JOHN BARKER, BT., The Grange, Bishop's Stortford, for Sandpiper (Supp. 1911), bay gelding; s. Sandiway 121, d. Pixie 1615 by Marmion.

263 II. (£10.)—HARRY WASPE, West Wickham Stud Farm, Cambs, for Wemsire, bay gelding, bred by Sir John Barker, BT., The Grange, Bishop's Stortford; s. Balsize (Supp. 1908-9), d. Wembley 1489.

261 III. (£5.)—TRESHAM GILBEY, Whitehall, Bishop's Stortford, for Forward Trizie (Supp. 1911), bay filly; s. Right For'ard 368, d. Patricia 1774.

269 R. N. & H. C.—H. FAUDEL-PHILLIPS, Mapleton Stud, Edenbridge, for Lady Buckingham.

¹ £30 towards these Prizes were given by the Polo and Riding Pony Society.

² Champion Gold Medal given by the Polo and Riding Pony Society for the best Stallion or Colt in Classes 41-43.

³ Champion Gold Medal given by the Polo and Riding Pony Society for the best Mare or Filly in Classes 42-46.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 45.—Polo and Riding Pony Mares, with Foals at foot, not exceeding 11·2 hands. [12 entries, 1 absent.]

- 303 I. (£15, & Champion.)—SIR WALTER GILBEY, BT, Elsenham Hall, Essex, for Sparkling Crocus (Supp 1911) chestnut, foaled in 1909, s. Merry Matchmaker 22, d. Crocus 1471 by Asotic. [Foal by Arthur D 593]
 295 II. (£10.)—SIR JOHN BARKER, BT., The Grange, Bishop's Stortford, for Redstone 1788, chestnut, aged, breeder unknown. [Foal by Right For'ard 388]
 294 III. (£5.)—SIR JOHN BARKER, BT., for Killarney 2nd 2068, chestnut, aged, breeder unknown. [Foal by Arthur D 593]
 303 R. N. & H. C.—LORD HENNIKER, Rifle Brigade, Tipperary, for Sappho 2nd.
 300 (B. M.)—H. FAUDEL-PHILLIPS, Mapleton Stud, Edenbridge, Kent.

Cleveland Bays or Coach Horses.

Class 46.—Cleveland Bay or Coaching Stallions, foaled in 1910 or 1911.

[5 entries, none absent.]

- 307 I. (£15.)—JOHN LETT, Cleveland Stud Farm, Rillington, York, for Billington Victor 2538 (Coaching), foaled in 1910 bred by W. Wood, Bilsdale West, Helmsley; s. Breston Prince 2451, d. Queen's Rocket 948 by Prince of the Dales.
 310 II. (£10.)—FRANK H. STERICKER, Westgate House, Pickering, for Tantalus 2544 (Coaching), foaled in 1911, bred by D. Contor, Eastgate, Pickering; s. Breston Prince 2451 & Violet 1199 by Lord Chief Justice 1241.
 306 III. (£5.)—GEORGE ELDERS, Toft House Farm, Aislaby, Sleights, Yorks., for Aislaby Lad 1732 (Cleveland Bay), foaled in 1911; s. Morton King 1699, d. Lady Staunthorpe 718 by Hillingdon 788.
 308 R. N. & H. C.—J. W. LETT, Scragglethorpe Manor, Malton, for Billington Lofly.

Class 47.—Cleveland Bay or Coaching Mares, with Foals at foot.

[3 entries, 1 absent.]

- 313 I. (£15.)—JOHN WEBSTER, Cross House, Harome, Nawton, Yorks, for Harome Beauty 1182 (Coaching), foaled in 1910; s. Breston Prince 2451, d. Belle of Harome 2nd 1105 by Lord Mischief 2288. [Foal by Bendlam Saxon 2558]
 311 II. (£10.)—JOHN LETT, Cleveland Stud Farm, Rillington, York, for Billington Attraction (Coaching), foaled in 1906; s. Special Delight 2390, d. Heroine 917 by Lucky Hero 2474. [Foal by Chalderton Luck 1712]

Hackneys.³

Class 48.—Hackney Stallions, foaled in 1912. [3 entries, 3 absent.]

- 316 I. (£15.)—WALTER BRIGGS, Linden Hall, Borwick, Carnforth, for Albin Briggella, dark chestnut; s. Albin Wildfire 10551, d. Angram Rosette 14900 by Rosador 4904.
 315 II. (£10.)—HENRY B. BRANDT, Capenor, Nutfield, Surrey, for Capenor Popularity, chestnut; s. Polonus 4931, d. Fragility 10940 by Agility 2789.
 320 III. (£5.)—A. T. JONES, The Lodge, Elloughton, Brough, for Albinus, chestnut, bred by W. Green, Langwell, Penistone, Yorks.; s. Polonus 4931, d. Rosalette 13377 by Rosador 4904.
 319 R. N. & H. C.—JOHN HIGNETT, Kenton Stud Farm, Harrow, for Master Matt.

Class 49.—Hackney Stallions, foaled in 1911. [7 entries, none absent.]

- 328 I. (£15, & R. N. for Champion.)—ROBERT WEIRWORTH, Lonsborough Stud, Market Weighton, for Beauty's Fashion 11980, chestnut, bred by W. J. Tennant, Carleton, Pontefract; s. Polonus 4931, d. Special Beauty 18908 by Royal Dane-gelt 6785.
 327 II. (£10.)—JOHN H. WELBOURNE, Kirkburn, Driffield, for King Augustus 12094, chestnut, bred by Richard Ford, Garton, Driffield; s. King of the East 10726, d. Welcome Home 18648 by Copper King 7764.
 325 III. (£5.)—SIR WALTER GILBEY, BT, Elsenham Hall, Essex, for Romping Bonny 12148, chestnut; s. Antonius 10559, d. Bonny Clara 6419 by Connaught 1453.
 326 R. N. & H. C.—SIR WALTER GILBEY, BT, for Romping Tony.

Class 50.—Hackney Stallions, foaled in 1910. [4 entries, 1 absent.]

- 331 I. (£15, & Champion.)—WALTER W. RYCOFT, Drake Hill Hackney Stud, Bingley, Yorks, for Hopwood King 11804, chestnut, bred by Sir Lees Knowles, BT, C.V.O., Pendlebury, Manchester; s. Admiral Orlinton 9578, d. Ryburn Lucinda 17696 by Ganymede 2076.

¹ Champion Gold Medal given by the Polo and Riding Pony Society for the best Mare or Filly in Classes 42-48.

² Bronze Medal given by the Polo and Riding Pony Society for the best foal in Class 45, entered or eligible for entry in the Polo and Riding Pony Supplement.

³ £30 towards these Prizes were given by the Hackney Horse Society.

⁴ Champion Gold Medal given by the Hackney Horse Society for the best Stallion in Classes 49-50.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 330 II. (£10.)—JOHN LETT, Cleveland Stud Farm, Rillington, York, for *Rillington Novelty* 11863, brown; s. Brigham Gallant 10130, d. Rillington Melody 2085 by Polonius 4931.

- 329 III. (£5.)—DR. ALEX. BOWIE, 4 Hertford Street, Mayfair, London, W., for *A 1's Indehle* 11656, chestnut; s. Mathias A 1 10751, d. Memento 12930 by Polonius 1931

Class 51.—Hackney Fillies, foaled in 1912. [4 entries, 2 absent.]

- 336 I. (£15.)—ROBERT WHITWORTH, Londesborough Stud, Market Weighton, for *Towthorpe Aillette*, chestnut; s. Polonius 4931, d. Black Pearl 10701 by Fireaway of Callis Wold 1483.

- 335 II. (£10.)—W. R. LYSAGHT, Castleford, Chap-low, for *Chapstow Rosemary*, chestnut; s. Hopwood Viceroy 9280, d. Kirkburn Sweetbriar 20014 by Kirkburn Toreador 8534.

Class 52.—Hackney Fillies, foaled in 1911. [6 entries, 1 absent.]

- 337 I. (£15 & R. N. for Champion.)—ERNEST BEWLEY, Danum, Rathgar, Co. Dublin, for *Beckingham Lady Gracious* 22385, chestnut, bred by Robert Surlett, The Lime, Beckingham, Gainsborough, s. Beckingham Squire 8070, d. Miss Helmsley 12953 by Danebury 4724

- 342 II. (£10.)—THOMAS SMITH, Shirley Stud, Hall Green, Birmingham, for *Shirley Summer Rose* 22811, bay; s. Beckingham Squire 8070, d. Last Rose of Summer 2890 by Lord Derby 2nd 417.

- 339 III. (£5.)—SIR WALTER GILBEY, BT., Elsenham Hall, Essex, for *Romping Polly* 22775, chestnut; s. Antonius 10559, d. Polly Olga 18409 by Rosador 4964.

- 340 R. N. & H. C.—JOHN HIGNETT, Kenton Stud Farm, Harrow, for *Lonely Lass*.

Class 53.—Hackney Fillies, foaled in 1910. [6 entries, 1 absent.]

- 344 I. (£15, & Champion.)—ERNEST BEWLEY, Danum, Rathgar, Co. Dublin, for *Woodhatch Sunflower* 22307, chestnut, bred by Richard P. Evans, Woodhatch House, Reigate; s. Polonius 4931, d. Woodhatch Iris 17859 by Garton Duke of Connaught 3009.

- 345 II. (£10.)—SIR WALTER GILBEY, BT., Elsenham Hall, Essex, for *Bouncey Girl* 21883, chestnut roan; s. Antonius 10559, d. Gallant Girl 15093 by Revival 7236

- 347 III. (£5.)—WALTER W. RYCROFT, Drake Hill Hackney Stud, Bingley, Yorks., for *Londesborough Terra* 22668 chestnut, bred by John Wiegandt, East Thorpe, Market Weighton; s. Kirkburn Toreador 8534, d. Londesborough Pattie 16776 by Rosador 4964.

- 348 R. N. & H. C.—R. H. SAMPSON, Bryngwili, Pontardulais, for *Bryngwili Flashlight*.

Class 54.—Hackney Mares, with Foals at foot, over 14, and not exceeding 15·2 hands. [4 entries, 2 absent.]

- 352 I. (£15.)—WALTER W. RYCROFT, Drake Hill Hackney Stud, Bingley, Yorks., for *Miss Harswell* 21551, chestnut, foaled in 1907, bred by W. Featherby, Harswell, York; s. Polonius 4931, d. Harswell Duchess 17357 by His Majesty 2513. [Foal by Admiral Chiquet 11667.

- 351 II. (£10.)—F. W. JONES, Llanmaes Stud Farm, St. Fagans, Cardiff, for *Honourable Maid* 19993, black chestnut, foaled in 1905, bred by W. Grayson, Normandy House, Pickering; s. Ryedale Duke 8361, d. Electricity 15756 by Drendnought 5981. [Foal by Athul 7688.]

Class 55.—Hackney Mares, with Foals at foot, over 15·2 hands. [4 entries, 1 absent.]

- 355 I. (£15.)—R. A. DE MANCHA, Waterside Stud, Frogmore, St. Albans, for *Bashful Kate* 14914, chestnut, foaled in 1901, bred by John Harrison, Garton-on-the-Wolds; s. Rosador 4964, d. Modest Kate 5383 by Rufus 1343. [Foal by Polonius 1931.]

- 353 II. (£10.)—HENRY B. BRANDT, Capenor, Nutfield, Surrey, for *Woodhatch Chocolate* 21137, dark chestnut, foaled in 1908, bred by Richard P. Evans, Woodhatch House, Reigate; s. Chocolate Junior 4185, d. Pollmaris 16856 by Polonius 4931. [Foal by Rud-ton Prince 8830.]

- 354 III. (£5.)—WILLIAM BROWICH, High Street, Sutton Coldfield, for *Shirley Belle* 19530, black, foaled in 1906, bred by Thomas Smith, Shirley Stud, Hall Green, Birmingham; s. Copper King 7764, d. Miss Oaxton 11294 by Oaxton 2398. [Foal by Warwick Matchless 11251.]

Class 56.—Hackney Foals, the produce of Mares in Classes 54 or 55. [6 entries, 2 absent.]

- 339 I. (£10.)—R. A. DE MANCHA, Waterside Stud, Frogmore, St. Albans, for chestnut colt, foaled March 28; s. Polonius 4931, d. Bashful Kate 14914 by Rosador 4964.

- 361 II. (£5.)—F. W. JONES, Llanmaes Stud Farm, St. Fagans, Cardiff, for dark bay colt, foaled Feb. 8; s. Athul 7688, d. Honourable Maid 19993 by Ryedale Duke 8361.

¹ Champion Gold Medal given by the Hackney Horse Society for the best Mare or Filly in Classes 51-56.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 358 III. (£3.)—WILLIAM BROMWICH, High Street, Sutton Coldfield, for chestnut filly, foaled March 16, s. Warwick Matchless 11251, d. Shirley Belle 19526 by Copper King 7761.
- 357 R. N. & H. C.—HENRY B. BRANDT, Capenor, Nutfield, Surrey.

Hackney Ponies.

Class 57.—Hackney Pony Stallions, foaled in or before 1910, not exceeding 14 hands. [6 entries, 2 absent.]

- 363 I. (£10.)—JOSHUA BALL, Southworth Hall, Warrington, for Southworth Swell 11219, bay, foaled in 1907, bred by E. W. Sankoy, Croft, Warrington; s. Pinderfield's Horace 7952, d. Tilton Maid 18278 by Berkeley Model 3663.
- 367 II. (£5.)—O. H. RAVENHILL STOCK, The Firs, Ottery St. Mary, for Son o' Horace 8853, bay, foaled in 1902; s. Sir Horace 5402 d. Witch o' Denmark 18356 by Sir Gibbie 1012.
- 368 III. (£3.)—D. R. THOMAS, Tanyrallt Stud, Talybont, for Tanyrallt Fireboy 11220, bay, foaled in 1908, bred by O. T. Price, Lyndhurst, Hants; s. Fire Boy 7440, d. Lyndhurst Paula 18780 by Tissington Horace 7653.
- 364 E. N. & H. C.—MISS MURGAIR LORT, Castlemae Pony Stud, Carnarvon, for Hopper Derry Dando.

Class 58.—Hackney Pony Colts, Fillies, or Geldings, foaled in 1911, not exceeding 13.2 hands. [2 entries.]

- 370 I. (£10.)—ROBERT WHITEWORTH, Londesborough Stud, Market Weighton, for Rasper Calypso (vol. 31), bay filly, bred by W. W. Hargrave, Normans, Rasper, Horsham; s. Tissington Gideon 9042, d. Tissington Calypso 17788 by Sir Horace 5402.
- 369 II. (£5.)—JOSHUA BALL, Southworth Hall, Warrington, for Earl Southworth 12034, bay colt; s. Southworth Swell 11219, d. Southworth Merriment 21671 by Southworth Tissington 9898.

Class 59.—Hackney Pony Fillies or Geldings, foaled in 1910, not exceeding 13.3 hands. [3 entries, 1 absent.]

- 371 I. (£10.)—JAMES E. AGATE, The Links, Chapel-on-le-Frith, for Rasper Maryan 22789, bay filly, bred by W. W. Hargrave, Normans, Rasper, Horsham; s. Tissington Gideon 9042, d. Parbold Lady Mary 13005 by Cynos 2387.
- 373 II. (£5.)—MISS LANGWORTHY, Hendens Manor, Holyport, Berks, for Holyport Furry Dance, chestnut filly, bred by W. S. Miller, Glendermott, Bute; s. Fire Boy 7440, d. Lady Thora 20818 by Goldlink 8381.

Class 60.—Hackney Pony Mares, with Foals at foot, not exceeding 14 hands. [3 entries.]

- 376 I. (£10.)—D. R. THOMAS, Tanyrallt Stud, Talybont, for Lyndhurst Paula 18780, bay, foaled 1903, bred by Sir Gilbert Greenall, Bt., C.V.O., Walton Hall, Warrington; s. Tissington Horace 7653, d. Merry Polly 8250 by Merry Sunshine 1523. [Foal by Tanyrallt Fireboy 11220.]
- 375 II. (£5.)—MRS. STANLEY HOWARD, The Hall, Mount Charles, Co. Donegal, for Seaham Norah, brown, foaled in 1905, bred by the Seaham Harbour Stud, The Dune, Seaham Harbour; s. Sir Horace 5102, d. Benton Nena 16611 by Tom Tit 2nd 5010. [Foal by Fire Boy 7440.]
- 374 III. (£3.)—JAMES HALLES, Rougham Pony Stud, Bury St. Edmunds, for Sedgemere Berry Midget 10181, bay, foaled in 1902, bred by W. Hollins, Mansfield; s. Prospector 6518, d. Grovelhill Midget 13530 by Matchless of Langton 5722. [Foal by Tissington Vandyke 11239.]

Shetland Ponies.

Class 61.—Shetland Pony Stallions, foaled in or before 1910, not exceeding 10½ hands. [3 entries.]

- 378 I. (£10 & Champion.¹)—WILLIAM MUNGALL, Transy, Dumfermline, for Selwood of Transy 619, black, foaled in 1908, s. Sea-weed 333, d. Stella 1692 by Thor 83.
- 377 II. (£5.)—MRS. HOBART, West Cliff Hall, Hythe, Southampton, for Dazzler 592, skewbald, foaled in 1908, bred by G. Haddon, Earls Croome, Worcester; s. Rattler 2nd 280, d. Moonlight 489 by Giant 10.
- 379 III. (£3.)—LADY EDWARD SOMERSET, Hambrook House, Charlton Kings, Glos., for Sandy Macpherson 804, chestnut, foaled in 1900, bred by Adam Johnson, Levenwick, Shetland; s. Vane Tempest 47, d. Maggie.

¹ Champion Silver Medal given by the Shetland Pony Stud Book Society for the best Animal in Classes 61 and 82.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 62.—Shetland Pony Mares, with Foals at foot, not exceeding 10½ hands.
[6 entries, 1 absent.]

- 385 I. (£10, & R. N. for Champion.¹)—WILLIAM MUNGALL, Tran-y, Dunfermline, for Stella 1892, black, foaled in 1899, bred by the Marquis of Londonderry, Seaham Hall; s. Thor 83, d. Silver Queen 1197 by Oman 83. [Foal by Nota Bene 632.]
380 II. (£5.)—MRS. OHOLMELEY, Kingsdown House, Swindon, for Banshee 2434, black, foaled in 1905, bred by Ladies E. and D. Hope, Grays, Haslemere; s. Haldor 270, d. Bretta 811 by Odin 32. [Foal by Wynyard Flash 682.]
383 III. (£3.)—MRS. HOBART, West Cliff Hall, Hythe, Southampton, for Shipley Belle 2457, dark brown, foaled in 1906; s. Captive 219, d. Osmunda 2014 by Odin 32. [Foal by Dazzler 592.]

Welsh Ponies.²

Class 63.—Welsh Pony Stallions, foaled in or before 1909, not exceeding 12 hands. [6 entries, 1 absent.]

- 386 I. (£10, & Champion.³)—SIR WALTER GILBEY, BT., Eissenham Hall, Essex, for Bledfa Shooting Star 73, grey, foaled in 1901, bred by S. M. Wilmot, The Chalet, Alveston, R.S.O.; s. Dyoll Starlight 4, d. Alveston Belle 873 by Cymro.
391 II. (£5, & R. N. for Champion.³)—H. MEURIC LLOYD, Delfryn, Llanwrda, for Dyoll Starlight 4, grey, foaled in 1894; s. Dyoll Glasult 488, d. Dyoll Moonlight 75.
387 III. (£3.)—MRS. H. D. GREENE, Grove, Craven Arms, for Grove Ballistite 200, grey, foaled in 1903, bred by H. Meuric Lloyd, Delfryn, Llanwrda; s. Dyoll Starlight 4, d. Dyoll Bala Gal 65.
389 R. N. & H. C.—JOHN D. LEWIS, Greenway, Narberth, for The Earl of Pembroke.

Class 64.—Welsh Pony Stallions, foaled in 1910, not exceeding 11½ hands, or 1911, not exceeding 11½ hands. [3 entries.]

- 394 I. (£10.)—R. H. SAMPSON, Bryngwili, Pontardulais, for Bryngwili Bright Light (vol. 13), bay, foaled in 1910, bred by Dr. W. C. Griffiths, Bryn House, Pontardulais; s. Dyoll Starlight 4, d. Gwladys 106.
392 II. (£5.)—MRS. H. D. GREENE, Grove, Craven Arms, for Grove Stalactite 452, grey, foaled in 1910; s. Grove Ballistite 200, d. Bledfa Tell Tale 943 by Tyrant 477.
393 III. (£3.)—CHARLES COLTMAN ROGERS, Stange Park, Radnorshire, for Stange Hall's Comet 494, chestnut, foaled in 1910; s. Dyoll Starlight 4, d. Stange Mite 1804.

Class 65.—Welsh Pony Mares, foaled in or before 1909, with Foals at foot, not exceeding 12 hands. [6 entries, 2 absent.]

- 397 I. (£10, & Champion.⁴)—MRS. H. D. GREENE, Grove, Craven Arms, for Nantyrharn Starlight 2207, grey, foaled in 1903, bred by H. Meuric Lloyd, Delfryn, Llanwrda; s. Dyoll Starlight 4. [Foal by Grove Ballistite 200.]
399 II. (£5, & R. N. for Champion.⁴)—EVAN JONES, Manorwen, Llandilo, for Little Doris 2904, bay, foaled in 1903, bred by Gen. Sir James Hill-Johnes, V.O., G.C.B. Dolaucothly, Llanwrda; s. Dyoll Starlight 4, d. Pretoria 218. [Foal by Dewi Stone.]
395 III. (£3.)—J. MARSHALL DUGDALE, Llwyn Stud Farm, Llanfyllin, Mont., for Muriel 2943, grey, foaled in 1904, breeder unknown. [Foal by Sirius 112.]
400 R. N. & H. C.—CHARLES COLTMAN ROGERS, Stange Park, Radnorshire, for Stange Aldernut.

Class 66.—Welsh Pony Fillies, foaled in 1910, not exceeding 11½ hands, or 1911, not exceeding 11½ hands. [4 entries, 1 absent.]

- 402 I. (£10.)—MISS E. C. V. HUGHES, Bryn Hawddgar, Llanarthney, for Hawddgar Piccadilly 3498, red roan, foaled in 1911, bred by Arthur Skinner, 59 Regent Street, London, W.; s. Shooting Star 73, d. Kitty Grey 2188 by Brigand 283.
401 II. (£5.)—MRS. H. D. GREENE, Grove, Craven Arms, for Grove Ballistite 3357, grey, foaled in 1911; s. Grove Ballistite 200, d. Betty of Plowden 3130.
404 III. (£3.)—H. MEURIC LLOYD, Delfryn, Llanwrda, for Dyoll Nimble 3197, black, foaled in 1910; s. Dyoll Starlight 4, d. Dyoll Quicksilver 76.

¹ Champion Silver Medal given by the Shetland Pony Stud Book Society for the best Animal in Classes 61 and 62.

² £42 towards these Prizes were given by the Welsh Pony and Cob Society.

³ Silver Medal given by the Welsh Pony and Cob Society for the best Stallion in Classes 63 and 64.

⁴ Silver Medal given by the Welsh Pony and Cob Society for the best Mare in Classes 65 and 66.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 67. *Brood Mares or Mares likely to make brood mares, of the Old Welsh Cob type, foaled in or before 1910, with or without foals at foot, not exceeding 11·2 hands.* [3 entries]

- 105 I. (£10, & Champion.¹)—J. MARSHALL DUGDALE, Llwyn Stud Farm, Llantiyllin, Mont., for *Llwyn Flashlight* 2nd 3655, chestnut, foaled in 1906, bred by R. Jones, Croesllyn, Llanidloes; s. *Idloes Flyer* 537, d. *Croesllyn Poll* 3622. [Foal by Llwyn Planet 523.]
- 107 II. (£5, & R. N. for Champion.¹)—MISS FURGAIN LORT, Castleman Pony Stud, Carnarvon, for *Derryn Cochddu* 3581, dark brown, foaled in 1909, bred by John Edwards, Bryndderwen, Abermule, Mont.; s. *George Horace* 18; d. *Polly*
- 406 III. (£3.)—J. MARSHALL DUGDALE, for *Llwyn Nancy* 2nd 4381, chestnut, foaled in 1909, bred by W. Ellis, Blaenycwm, Llantiyllin; s. *Cyniro Ddu*, d. by *Eiddwen Flyer*.

Hunter Riding Classes.²

Class 68.—*Hunter Mares or Geldings, foaled in 1909, up to from 12 to 14 stone.* [13 entries.]

- 410 I. (£15.)—J. ERIC OLEGG, The Starkies, Bury, for *Kilts*, grey gelding, bred by Alired Craspy, North Newbald, York; s. *Scotch Sign*, d. *Silver Tail* by *Knight Templar*.
- 409 II. (£10.)—ROBERT ALNER BOWRING, Rockhill, Keynsham, for *Fireway* (Supp. No. 170), bay gelding, bred by T. Kehoe, Ballylarmogue, Screen, Co. Wexford; s. *Murrough*.
- 418 III. (£5.)—JOHN H. STOKES, Great Bowden, Market Harborough, for *Royal Acorn*, bay gelding, bred by Mr. Goodwill, Stuttonham, York; s. *Selfy Royal*.
- 116 IV. (£5.)—W. ADAM LEACH, Brindish Street Farm, Allertord, Somerset, for *The Doctor*, bay gelding, bred by Mr. Jones, Tipperary; s. *Miltiaver*, d. by *Old Speculation*.
- 412 V. (£5.)—JERSEY DE KNOOP, Calveley Hall, Tarporley, for *Call Boy*, chestnut gelding, breeder unknown.
- 115 R. N. & H. C.—J. ARTHUR JONES, Omberley, Droitwich, for *Durbar*.

Class 69.—*Hunter Mares or Geldings, foaled in 1909, up to more than 14 stone.* [10 entries.]

- 130 I. (£15, & Champion.³)—JOHN H. STOKES, Great Bowden, Market Harborough, for *Chatterer*, chestnut gelding.
- 425 II. (£10.)—TOM R. JONES, Downton, Salisbury, for *Golden Slipper*, chestnut gelding, bred by P. Ashe, Chapel Street, Newcastle West; s. *Greenhackle*, d. by *Perragonus*.
- 421 III. (£5.)—J. ARTHUR JONES, Omberley, Droitwich, for *Full Cry* (Supp. No. 174), brown gelding, bred by G. Cook, Hawford Grange, Worcester; s. *Fair Start* d. by *Victor*.
- 421 IV. (£5.)—THE HON. MRS. DRURY-LOWE, Locko Park, Derby, for *Irish Duke*, chestnut gelding, bred by R. Hooford, Mighin Farm, Ballincollig, Co. Cork; s. *Sterling Duke*, d. by *Kirkham*.
- 423 V. (£5.)—ALFRED JAMES, St. John's Mews, Totterdown, Bristol, for *Golden Wave*, chestnut gelding, bred by Miss Ann Doyle, Kilkeel, Bally Murchon, Co. Longford; s. *Clarendon*, d. by *Diamond Sterling*.
- 422 R. N. & H. C.—SIR WALTER GILBEY, Bt., Felsenham Hall, Essex, for *Sparkling John*.

Class 70.—*Hunter Mares or Geldings, Novice, foaled in or before 1908, up to from 12 to 14 stone.* [18 entries.]

- 136 I. (£15.)—JERSEY DE KNOOP, Calveley Hall, Tarporley, for *Groban*, bay mare, foaled in 1908, breeder unknown.
- 413 II. (£10.)—H. W. NELL, Lilliput Court, Chipping Sodbury, for *Carbine*, bay gelding, foaled in 1908.
- 435 III. (£5.)—MRS. M. R. OTTFRILL, Sandal Lodge, Droitwich, for *One O'Clock*, chestnut gelding, foaled in 1908, bred by Mr. O'Connor, Ballyhooley; s. *Crackenthorpe*.
- 437 IV. (£5.)—JOHN DRAGE, Chapel Bampton, Northampton, for *Energy*, bay gelding, foaled in 1908, breeder unknown.
- 448 V. (£5.)—HERMAN A. PIARKS, Webbington House, Axbridge, for *Drury Lane*, brown gelding, foaled in 1908, bred by F. Tilley, Alstone Court, Huntspill; s. *Pantomime*, d. *Bezique* by *Faro*.
- 432 R. N. & H. C.—ROBERT ALNER BOWRING, Rockhill, Keynsham, for *Osteway*.

¹ Silver Medal given by the Welsh Pony and Cob Society for the best Mare in Class 67, entered or accepted for entry in the Welsh Pony Stud Book.

² Prizes given by the Bristol Local Committee.

³ Gold Challenge Cup given by gentlemen interested in Hunters for the best Mare or Gelding in Classes 68-74.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 71.—*Hunter Mares or Geldings, Novice, foaled in or before 1908, up to more than 14 stone.* [11 entries.]

- 453 I. (£15).—JOHN DRAGE, Chapel Brampton, Northampton, for Cornet, bay gelding foaled in 1908, breeder unknown.
 452 II. (£10).—G. P. DEWHURST, Delamere, Northwich, for Delamere, bay gelding, foaled in 1908.
 456 III. (£5).—ARTHUR SOWLER, The Warren, Finmere, Buckingham, for J.P., bay gelding, foaled in 1908, bred by R. W. Wildsmith, Burnham Manor, Barton-on-Humber; s. Magistrate.
 470 IV. (£5).—ROBERT ALNER BOWRING, Rockhill, Keynsham, for The Chief, chestnut gelding, foaled in 1908, bred by J. Kingston, Mine Bridge, Carrigaline, Co. Cork; s. Zulu Chief, d. by Rockham.
 455 V. (£5).—J. N. A. HOBBS, Chipping Sodbury, for Prince, bay gelding, foaled in 1908, bred by J. Bennett, Down House, Dursley, s. Nicholas 2nd, d. by Beaulieu Great Gun.

Class 72.—*Hunter Mares or Geldings, foaled in or before 1909, up to from 12 to 13·7 stone.* [23 entries.]

- 458 I. (£20, & R. N. for Champion).—JOHN DRAGE, Chapel Brampton, Northampton, for Bridge, bay gelding, foaled in 1908, breeder unknown.
 465 II. (£15).—J. HAROLD WATSON, Green Hill, Kidderminster, for Curly Greens 4124, dark brown mare, foaled in 1909, bred by J. Dornell, Bredecott, near Worcester; s. Savoy.
 410 III. (£10).—J. ERIC CLEGG, for Kilts. (See Class 68.)
 436 IV. (£5).—JERSEY DE KNOOP, for Groban. (See Class 70.)
 464 V. (£5).—PERCY C. THOMAS, Castle Green, Taunton, for M.P. (Supp. 90), chestnut gelding, foaled in 1908, bred by Hugh Murray, Giltown, Newbridge, Co. Kildare; s. The Gull, d. Fancy Princess 4154 by Red Prince 2nd.
 411 R. N. & H. C.—JOHN DAY, Huxham, Shepton Mallet, for Cragella.

Class 73.—*Hunter Mares or Geldings, foaled in or before 1909, up to more than 13·7 and not more than 15 stone.* [13 entries.]

- 453 I. (£20).—JOHN DRAGE, for Cornet. (See Class 71.)
 468a II. (£15).—W. L. LINDSAY HOGG, Haywards Grange, Jarvis Brook, Sussex, for Free and Easy, bay gelding, foaled in 1908, breeder unknown.
 409 III. (£10).—ROBERT ALNER BOWRING, for Fireway. (See Class 68.)
 466 IV. (£5).—MRS. HUGH CORBET, Downton, Shrewsbury, for Rubric 4533, bay mare foaled in 1907.
 416 V. (£5).—W. ADAMS LEACH, for The Doctor. (See Class 66.)
 421 R. N. & H. C.—THE HON. MRS. DRURY-LOWE, for Irish Duke. (See Class 60.)

Class 74.—*Hunter Mares or Geldings, foaled in or before 1909, up to more than 15 stone.* [12 entries.]

- 476 I. (£20).—JOHN H. STOKES, Great Bowden, Market Harborough, for Muntz, brown gelding, foaled in 1908.
 473 II. (£15).—JOHN DRAGE, Chapel Brampton, Northampton, for Nimrod, grey gelding, foaled in 1908, breeder unknown.
 453 III. (£10).—G. P. DEWHURST, for Delamere. (See Class 71.)
 458 IV. (£5).—ARTHUR SOWLER, for J.P. (See Class 71.)
 430 V. (£5).—ROBERT ALNER BOWRING, for The Chief. (See Class 71.)
 471 R. N. & H. C.—C. G. BEARD, Edmondscote Manor, Leamington Spa, for Carlow.

Hacks or Riding Ponies.²

Class 75.—*Mares or Geldings, Hunter or Polo Type (light weight), foaled in or before 1909, not exceeding 15 hands.* [5 entries.]

- 481 I. (£15).—H. FAUDEL-PHILLIPS, Mapleton Stud, Edenbridge, for Tarantella 1901, chestnut mare, foaled in 1905, bred by T. G. Heywood, White Hart, Okehampton; s. Turgot (vol. 18, p. 602 G.S.B.) d. Dolly by Freshwater.
 477 II. (£10).—MISS VIOLET ALLEN, Woodlands, Taunton, for Lady Kitty, brown mare, foaled in 1908.
 478 III. (£5).—MRS. W. N. CHAPMAN, Heppington, Canterbury, for Suakim, bay mare, foaled in 1908.

Class 76.—*Mares or Geldings, Hunter or Polo Type (heavy weight), foaled in or before 1909, not exceeding 15 hands.* [3 entries.]

- 482 I. (£15).—MRS. W. N. CHAPMAN, Heppington, Canterbury, for Cafe Noir, chestnut mare, foaled in 1907.
 483 II. (£10).—H. FAUDEL-PHILLIPS, Mapleton Stud, Edenbridge, for The Bishop, bay gelding.

¹ Gold Challenge Cup given by gentlemen interested in Hunters for the best Mare or Gelding in Classes 68-74.

² Prizes given by the Bristol Local Committee.

Award of Live Stock Prizes at Bristol, 1913. lxvii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 77.—Mares or Geldings, Park Hacks (light weight), foaled in or before 1909, exceeding 15 hands [11 entries.]

- 448 I. (£15, & Champion.¹)—H. FAUDEL-PHILLIPS, Mapleton Stud, Edenbridge, for Chocolate Soldier, chestnut gelding, foaled in 1907, bred by Sir John Barker, Bt., The Grange, Bishop's Stortford; s. Jew Boy, d. Lightning.
 449 II. (£10.)—J. ERIC OLEGG, for Kilts. (See Class 68).
 440 III. (£5.)—H. DEWHURST, Daleford, Sandiway, Cheshire, for Silver King, grey gelding, foaled in 1908, breeder unknown.
 448 E. N. & H. C.—HERMAN A. TILKS, for Drury Lane. (See Class 70).

Class 78.—Mares or Geldings, Park Hacks (heavy weight), foaled in or before 1909, exceeding 15 hands. [4 entries.]

- 402 I. (£15, & R.N. for Champion.¹)—MRS. W. N. CHAPMAN, Heppington, Canterbury, for Vivandiere, brown mare, foaled in 1908.

Driving Classes.²

Class 79.—Harness Mares or Geldings, Novices, not exceeding 14 hands.
 [10 entries.]

- 496 I. (£15.)—WILLIAM FOSTER, Mel-Valley, Moseley, Worcs., for Mel-Valley's Bauble, bay mare, foaled in 1907, bred by Sir Gilbert Greenall, Bt., C.V.O., Walton Hall, Warrington; s. Berkeley Claudius 8372, d. by Warriner 8025.
 502 II. (£10.)—T. W. SIMPSON, Greenfield House, Laleham-on-Thames, for Firecracker 11751, brown gelding, foaled in 1908, bred by W. Duncan, Langerags Farm, Paisley; s. Fire Boy 7440, d. Langerags Trilby 23108 by Commerce 7406.
 499 III. (£5.)—F. W. JONES, Llanmaes Stud Farm, St. Ewgans, Cardiff, for Trehanog Horace, brown gelding, foaled in 1908, bred by the Exors. of the late James Howell, Llanmaes Stud; s. Woodlands Eaglet 8539, d. Dewdrop by General Gordon 2084.
 501 IV. (£5.)—BERTRAM W. MILLS, Redhill Farm, Edgware, for Red Hill Star, brown gelding, foaled in 1908, bred by Ewan Jones, Manoravon, Llandilo; s. Lord Towryvale 10308, d. Dora by Little Jim 8929.
 373 E. N. & H. C.—MISS LANGWORTHY, for Holyport Furry Dance. (See Class 59.)

Class 80.—Harness Mares or Geldings, Novices, over 14 and not exceeding 15 hands. [18 entries.]

- 520 I. (£15 & R. N. for Champion.³)—J. D. ROBINSON, Sledmere, Malton, for Radiant Star 22765, chestnut mare, foaled in 1907, bred by Sir Prince Smith, Bart., Hillbrook, Kilsillee; s. Kirkburn Toreador 8534, d. Electra 7815 by Ganymede 2076.
 504 II. (£10.)—MRS. FREDERICK E. COLMAN, North Park, Epsom Downs, for Lady Viola 23106, bay mare, foaled in 1908, bred by John Baird 35 Castle Street, Dumfries; s. Master Mathias 10310, d. Bold Starlin 10789 by Carton Duke of Connaught 3009.
 519 III. (£5.)—THE EXORS. OF THE LATE FRANK RILEY-SMITH, Tadcaster, for Barton Mystery, dark chestnut mare, foaled in 1908, bred by Frank Riley-Smith; s. Polonius 4931, d. Inholmes Mystery 8898 by Lord Hamlet 3750.
 510 IV. (£5.)—WILLIAM FOSTER, Mel-Valley, Moseley, Worcs., for Mel-Valley's Dimple, bay mare, foaled in 1907, bred by Sir Gilbert Greenall, Bart., C.V.O., Walton Hall, Warrington; s. Sir Horace 5402, d. by Goldfinder 6th 1791.

Class 81.—Harness Mares or Geldings, Novices, over 15 hands.
 [27 entries.]

- 540 I. (£15, & Champion.³)—T. W. SIMPSON, Greenfield House, Laleham-on-Thames, for Frailty 21350, chestnut mare, foaled in 1908, bred by W. Burdett-Contts, M.P., Brookfield Stud, London, N.W.; s. Polonius 4931, d. Frugility 10940 by Agility 2798.
 546 II. (£10.)—HENRY WATSON, Newton Kymas, Tadcaster, for Miss Luffy 20870, chestnut mare, foaled in 1907, bred by Thomas Watson, Ellerton, York; s. Lord Luffy 9704, d. Velein 18718 by Sensationalist 5899.
 534 III. (£5.)—A. W. HICKLING, Adbolton, Nottingham, for Adbolton Black Prince 11314, black gelding, foaled in 1909; s. Mathias 6473, d. Princess Clare 12227 by Carton Duke of Connaught 3009.
 525 IV. (£5.)—EDWARD COLSTON, Roundway Park, Devizes, for Constable, bay gelding, foaled in 1908.
 526 E. N. & H. C.—NIGEL C. COLMAN, Nork Park, Epsom Downs, for Royal Simon.

¹ Gold Challenge Cup given by gentlemen interested in Hacks and Riding Ponies for the best Animal in Classes 75-78.

² Prizes given by the Bristol Local Committee.

³ Gold Challenge Cup, given by gentlemen interested in Harness Horses, for the best Animal in the Novice Classes 79-81.

lxviii *Award of Live Stock Prizes at Bristol, 1913.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 82.—*Harness Mares or Geldings, not exceeding 14 hands.*

[10 entries.]

- 548 I. (£15).—WILLIAM FOSTER, Mel-Valley, Moseley, Wores., for *Mel-Valley's Fame* bay gelding foaled in 1900, bred by Walter Cliff, Melbourne Hall, York; s. Royal Success 8093, d. Wortley Bell 14773 by Sir Horace 5402.
 496 II. (£10).—WILLIAM FOSTER, for *Mel-Valley's Bauble*. (See Class 70.)
 489 III. (£5).—F. W. JONES, for *Trehanog Horace*. (See Class 70.)
 371 IV. (£5).—JAMES E. AGATE, for *Rusper Maryan*. (See Class 50.)
 498 E. N. & H. C.—MRS. A. W. HENDY, Soundwell Road Staple Hill, Bristol, for *Never Mind*.

Class 83.—*Harness Mares or Geldings, over 14 and not exceeding 15 hands.*

[19 entries.]

- 563 I. (£15).—PHILIP SMITH, Haddon House, Ashton-on-Mersey, for *Queen of Ayr* 20178, bay mare, foaled in 1903, bred by Mrs. Walker, Limesfield, West Calder; s. Mathias 6173, d. Dearest 2nd 10827 by Lord Rickell 5288.
 561 II. (£10).—PHILIP SMITH, for *Melbourne Princess* 19317, bay mare, foaled in 1906, bred by Walter Cliff, Melbourne Hall, York; s. Merry Wildfire 9312, d. Melbourne Duchess 14571 by Garton Duke of Connaught 3009.
 520 III. (£5).—J. D. ROBINSON, for *Radiant Star*. (See Class 80.)
 559 IV. (£5).—CHARLES RADCLIFFE, 19, Newport Road, Cardiff, for *Peterston Pearl* 19421, chestnut mare, foaled in 1906; s. Polonus 4931, d. Princess Royal 10142 by His Majesty 2513.
 560 E. N. & H. C.—CHARLES RADCLIFFE, for *Peterston Princess*.

Class 84.—*Harness Mares or Geldings, over 15 and not exceeding 15.2 hands.*

[18 entries.]

- 568 I. (£15, & R. N. for Champion¹).—PHILIP SMITH, Haddon House, Ashton-on-Mersey, for *King of the Air*, dark brown, foaled in 1907, bred by G. McGill, Hollinbrook House, Littleborough, Lancs; s. Mathias 6473, d. Holm Flashlight 18700 by Norbury Lightning 7563.
 567 II. (£10).—MISS ELLA S. ROSS, Beechfield, Sale, Cheshire, for *Grand Vulcan*, black gelding, foaled in 1902, bred by R. O. Marshall, Burntshields, Kilbarchan; s. Mathias 6473, d. Rosetta 8426 by Lord Derby 2nd 417.
 564 III. (£5).—NIGEL C. COLMAN, Nork Park, Epom Downs, for *Authority* 7090, bay gelding, foaled in 1900, bred by S. R. Tennant, Great Kendall, Driffield; s. (any, medo 2070, d. Family Pride 2728 by Lord Derby 2nd 417.

Class 85.—*Harness Mares or Geldings, over 15.2 hands.*

[14 entries.]

- 574 I. (£15, & Champion¹).—T. W. SIMPSON, Greenfield House, Laleham-on-Thames, for *Argo* 10504, chestnut gelding, foaled in 1907, bred by W. Burrell-Quints, M.P., Brookfield Stud, London, N.W.; s. Polonus 4931, d. Frangit 10910 by Agility 2799.
 571 II. (£10).—H. LE MARCHANT, Elmwood, East Croydon, for *Gaythorn*, chestnut gelding, foaled in 1905, bred by James Prentice, Uddington, N.B.; s. Mathias 6473, d. Sweetlips by Star of the East.
 573 III. (£5).—MISS ELLA S. ROSS, Beechfield, Sale, Cheshire, for *Grand Viscount*, black gelding, foaled in 1906, bred by Gavin Ross, Dykehead, Chapelton; s. Mathias 6473, d. Maid of Honour 1245 by Confidence 163.
 546 IV. (£5).—HENRY WATSON, for *Miss Lofty*. (See Class 81.)
 525 E. N. & H. C.—EDWARD COLSTON, for *Constable*. (See Class 61.)

Class 86.—*Pairs of Harness Mares or Geldings, not exceeding 15 hands, to be driven in Double Harness.*

[7 entries.]

- 562 & 561 I. (£15, & Champion²).—PHILIP SMITH, for *Queen of Ayr* (see Class 83); and *Melbourne Princess* (see Class 83).
 559 & 560 II. (£10).—CHARLES RADCLIFFE, for *Peterston Pearl* (see Class 83); and *Peterston Princess* 20933, chestnut mare, foaled in 1908; s. Polonus 4931, d. Princess Royal 10142 by His Majesty 2513.
 548 & 577 III. (£5).—WILLIAM FOSTER, for *Mel-Valley's Fame* (see Class 82); and *Mel-Valley's Famous*, foaled in 1907.

Class 87.—*Pairs of Harness Mares or Geldings, over 15 hands, to be driven in Double Harness.*

[10 entries.]

- 579 & 573 I. (£15, & R. N. for Champion²).—MISS ELLA S. ROSS, for *Grand Vizier*, black gelding, foaled in 1902, bred by Henry Whitlock, Newland, Hull; s. Gentleman John 5624, d. Fairy Queen 6643 by Ourfew 1755; and *Grand Viscount* (see Class 85.)

¹ Gold Challenge Cup, given by gentlemen interested in Harness Horses, for the best animal in Classes 82-85.

² The "Viking" Gold Challenge Cup, given by a Member of the R.A.S.K. for the best pair in Classes 86 and 87.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

581 & 538 II. (£10.)—MISS DORA SCHINTZ, Childwall Hall, Liverpool, for Catalina 17320, chestnut mare, foaled in 1903, bred by W. Burdett-Gutts, M.P., Brookfield Stud, London, N.W.; s. Polonius 4931, d. Cuckoo Bright 10403 by Last Fashion 4343; and Aerial Queen 20173, chestnut mare, foaled in 1908, bred by R. P. Evans Woodhatch House, Reigate; s. Polonius 4931, d. Juha 11029 by Dagenham 4214.

571 & 540 III. (£5.)—T. W. SIMPSON, for Argo (see Class 85); and Frailty (see Class 81)

580 & 587 IV. (£5.)—MISS ELLA S. ROSS, for Grand Vulture 11154, black gelding, foaled in 1908, bred by Edwin Norman Manor Farm, Haddenham; s. Witcham Friar Tuck 8036, d. Carotte 18985 by Prickwillow King 7937; and Grand Vulcan (see Class 81.)

Class 88.—Pairs of Harness Mares or Geldings, not exceeding 15 hands, to be driven Tandem. [8 entries.]

562 & 561 I. (£15, & Champion.¹)—PHILIP SMITH, for Queen of Ayr (see Class 83); and Melbourne Princess (see Class 83).

548 & 577 II. (£10.)—WILLIAM FOSTER, for Mel-Valley's Fame (see Class 82); and Mel-Valley's Famous (see Class 86).

550 & 540 III. (£5.)—CHARLES RADCLIFFE, for Peterston Pearl (see Class 83); and Peterston Princess (see Class 86).

551 & 552 IV. (£5.)—MRS. FREDERICK E. COLMAN, Nork Park, Epsom Downs, for Alice Garton 18882, brown mare, foaled in 1902, bred by Richard Ford, Garton, Driffield; s. President Roosevelt 8246, d. Arfon Mustard 16409 by Mithras 6173; and Crystalline 13393, brown mare, foaled in 1890, bred by the late F. E. Colman; s. Royal Danegelt 5785, d. Moonlight 1435 by Old Times 1803.

Class 89.—Pairs of Harness Mares or Geldings, over 15 hands, to be driven Tandem. [10 entries.]

574 & 540 I. (£15, & R. N. for Champion.¹)—T. W. SIMPSON, for Argo (see Class 85); and Frailty (see Class 81)

573 & 567 II. (£10.)—MISS ELLA S. ROSS, for Grand Viscount (see Class 85); and Grand Vulcan (see Class 81).

564 & 539 III. (£5.)—NIGEL C. COLMAN, for Royal Simon, bay gelding, foaled in 1907, bred by T. Davies, Litchwood, Llanvbyther; s. St. Simon 7391, d. Sunflower by Middleton Relish 7931; and Authority (see Class 81.)

580 & 579 IV. (£5.)—MISS ELLA S. ROSS, for Grand Vulture (see Class 87); and Grand Vizier (see Class 87.)

Four-in-hand Teams.

Class 90. Mares or Geldings. [3 entries.]

C I. (£20, & Champion.²)—MISS ELLA S. ROSS, Beechfield, Sale, Cheshire. -Four blk. & s.

A II. (£15, & R. N. for Champion.²)—WILLIAM ARTHUR BARRON, 91 Westbourne Terrace, London, W. Four chestnuts.

Draught Horses.*

Class 91. Draught Mares or Geldings, foaled in or after 1907.

[3 entries.]

582 I. (£10.)—HENRY BRIDGMAN, Grove Hill Farm, Downend, Bristol, for Dinah (Shire), brown mare foaled in 1910.

583 II. (£5.) W. RICHMOND JAMES, Rookery Farm, Binegar, Bath, for Binegar Pattern 60313 (Shire), bay mare, foaled in 1908; s. Blaze of Worley 2nd 31155, d. Beckington Girl 1817 by Lockinge Napoleon 18157.

584 III. (£4.)—HENRY MATTHEWS, Down Farm, Winterbourne, Bristol, for Forestarer (Shire), roan gelding, foaled in 1907; s. Stanton Forest King, d. Winterbourne Lively by Gown-boy.

JUMPING COMPETITIONS.³

Class A.—Mares or Geldings. [10 entries.]

13 } Equal Prize { F. W. FOSTER, Marsh Farm, Etwall, Derby, for Paddy.
5 } of £17 10s. { THOMAS & HENRY WARD, Almsford Bank Farm, Leeds Road, Harrogate for Fisherman.

18 III. (£5.)—MISS MONA DUNN, Kingston Hill, Surrey, for Comet.

19 IV. (£5.)—THOMAS GLENROSS, Levens Box, Weston-super-Mare, for Tradesman.

15 V. (£5.)—THOMAS GLENROSS, for Nomination.

¹ The "Venture" Gold Challenge Cup, given by a Member of the R.A.S.E. for the best Tandem in Classes 88 and 89.

² Gold Challenge Cup, given by a Member of the R.A.S.E. interested in Coaching, for the best Team in Class 90.

³ Prizes given by the Bristol Local Committee.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class B.—Mares or Geldings. [20 entries.]

- 12 I. (£20)—MISS MONA DUNN, Kingston Hill, Surrey, for Comet.
 9 II. (£10.)—T. & W. SINGER, High House, Corsley Warminster, for Springbok.
 2 III. (£5.)—JAMES P. GLENOCROSS, Garth House, Weston-super-Mare, for Lady.
 18 IV. (£5.)—A. E. MERRETT, Southgate Street, Gloucester, for Why Not.
 14 V. (£5.)—W. LEWES, Plasgeller, Llandysul, for Two Step.

Class C.—Mares or Geldings. [20 entries.]

- 2 I. (£15.)—THOMAS & HENRY WARD, Almsford Bank Farm, Leeds Road, Harrogate, for Fisherman.
 7 II. (£10.)—THOMAS GLENOCROSS, Loose Box, Weston-super-Mare, for Tradesman.
 4 III. (£5.)—T. M. & WALTER DAVIES, Sharcombe Park, Wells, for Steppay Queen.
 14 IV. (£5.)—JAMES P. GLENOCROSS, Garth House, Weston-super-Mare, for Lady.
 19 V. (£5.)—F. W. FOSTER, Marsh Farm, Etwell, Derby, for Mustard.

Class D.—Champion Class. Mares or Geldings [17 entries]

- 4) Equal Prize { T. & W. SINGER, High House Corsley, Warminster, for Springbok.
 17) of £20. { F. W. FOSTER, Marsh Farm, Etwell, Derby, for Paddy.
 12 III. (£10.)—MISS MONA DUNN, Kingston Hill, Surrey, for Comet.
 10 IV. (£5.)—THOMAS & HENRY WARD, Almsford Bank Farm, Leeds Road, Harrogate, for Fisherman.
 8 V. (£5.)—A. E. MERRETT, Southgate Street, Gloucester, for Why Not.

CATTLE.

Shorthorns.

Class 92.—Shorthorn Cows (in-milk), calved in or before 1909.

[10 entries, 2 absent.]

- 590 I (£10.)—WALTER MONTAGU SCOTT, Nether Swell Manor, Stow-on-the-Wold, for Gay Maid (vol. 57, p. 1150), roan, born April 17, 1905, calved Feb 10, 1913, bred by George Walker, Tillygreig, Udry; s. Defender 88363, d. Gay Lady by Pride of Day 79597.
 588 II. (£6.)—JOHN HENRY MADEN, Rockcliffe House, Baccup, for Bertha 9th (vol. 57, p. 733), white, born March 3, 1907, calved Jan. 15, 1913, bred by J. & A. Milne, Nether Cairnhill, Muchalls, Stonehaven; s. Administrator 90610, d. Bertha 6th by Count Sunshine 74304.
 585 III. (£4.)—RICHARD JAMES BALSTON, Bilsington Priory, Ashford, Kent, for Dewlap (vol. 56 p. 461), roan, born July 27, 1909, calved March 23, 1913; s. Tehidy Robin Hood 97420, d. Maydew by Rufus of Huntingtower 93306.
 591 IV. (£3.)—LORD SHERBORNE, Sherborne Park, Northleach, for Sherborne Fairy 2nd (vol. 57, p. 1156), roan, born Jan. 13, 1908, calved May 17, 1913; s. Scottish Monarch 77828, d. White Fairy by Fortune 70467.
 586 R. N. & H. C.—W. M. CAZALET, Fairlawne, Tonbridge, for Jilt 46th.
Class 93.—Shorthorn Heifers (in-milk), calved in 1910.¹ [6 entries, none absent.]
 598 I. (£10.)—O. E. GUNTHER, Tongswood, Hawkhurst, for Tongswood Edith (vol. 57, p. 767), roan, born Jan. 21, calved May 8, 1913; s. Spice Hope 101032, d. Strawberry Dame by Prince Benedict 88904.
 595 II. (£8.)—CAPT. OLIVE BEHRENS, Swinton Grange, Malton, for Swinton Ursula (vol. 57, p. 683), roan, born Jan. 12, calved Dec. 1, 1912; s. Chiddingtong Hall 101787, d. Swinton Baroness 3rd by Hartgrange Marquis 91948.
 597 III. (£4.)—RICHARD CORNELIUS, Bankfields, Eastham, Cheshire, for Bankfields Belle (vol. 57, p. 549), roan, born May 19, calved March 3, 1913; s. Village Beau 87631, d. Eastington Phantom 3rd by Aldsworth Jasper 86147.
 596 R. N. & H. C.—W. M. CAZALET, Fairlawne, Tonbridge, for Clipper Keepsake.

Class 94.—Shorthorn Heifers, calved on or between January 1, 1911, and March 31, 1911. [17 entries, 2 absent.]

- 601 I. (£10, and Champion.)²—HIS MAJESTY THE KING, Royal Farms, Windsor, for Windsor Belle (vol. 58, p. 342), roan, born Jan. 10; s. Evander 95106, d. Zoe 9th by Royal Sanguhar 79839.
 616 II. (£8.)—J. DEANE WILLIS, Bapton Manor, Oddford, Wilts, for Bapton Beauty (vol. 58, p. 1032), roan, born Feb. 5; s. Alnwick Favourite 90853, d. Beauty 3rd by My Hope 88705.

¹ Prizes given by the Shorthorn Society.

² Champion Prize of £20 given by the Shorthorn Society for the best Cow or Heifer in Classes 92-97 and 105-7.

Award of Live Stock Prizes at Bristol, 1913. lxxi

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 002 III. (£4.)—RICHARD JAMES BALSTON, Bilsington Priory, Ashford, Kent, for Bess of Bilsington (vol. 58, p. 381), roan, born Feb. 4; s. Golden Cloud 108750, d. Bess 9th by Royal Prince 91268.
 607 IV. (£3.)—C. H. HUNTER, Tongswood, Hawkhurst, for Tongswood Missie 2nd (vol. 58, p. 607), red and little white, born Feb. 19; s. Orphan Stamp 103261, d. Latton Missie 3rd by Royal Pippin 96936.
 614 R. N. & H. C.—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for Golden Pearl.

Class 95.—Shorthorn Heifers, calved on or between April 1, 1911, and December 31, 1911. [18 entries, 6 absent.]

- 618 I. (£10.)—RICHARD JAMES BALSTON, Bilsington Priory, Ashford, Kent, for Bilsington Pink 2nd (vol. 58, p. 381), roan, born June 20; s. Golden Cloud 108750, d. Pluto's Pink 2nd by Chiddingstone Wanderer 91224.
 630 II. (£8.)—JOHN HENRY MADEN, Rockcliffe House, Bacup, for Hawthorn Queen (vol. 58, p. 585), roan, born July 20, bred by John Gill, Thorn Farm, Stanton, Penrith; s. Regent 100751, d. Hawthorn Berry 2nd by Proud Monarch 82961.
 626 III. (£4.)—LADY GRANTLEY, Oakley Hall, Cirencester, for Curfew Bell (vol. 58, p. 700), roan, born May 8, bred by O. W. Kellock, Highfield, Audlem, Cheshire; s. Gerome of Cluny 91810, d. Winning Bell by Winning Hope 80288.
 631 IV. (£3.)—JOHN HENRY MADEN, for Rockcliffe Graceful (vol. 58, p. 764), white, born May 18; s. Rockcliffe Scotchman 100812 d. Hoole Graceful by Man O' War 92438.
 635 R. N. & H. C.—COLONEL FAIRFAX RHODES, Brockhampton Park, Andoversford, Glos., for Ootchay Beauty 2nd.

Class 96.—Shorthorn Heifers, calved on or between January 1, 1912, and March 31, 1912. [20 entries, 5 absent.]

- 654 I. (£10. & R. N. for Champion.)—J. DEANE WILLIS, Bapton Manor, Codford, Wilts., for Dauntless Princess, roan, born Jan. 18; s. Alnwick Favourite 90851, d. Dauntless Queen (vol. 56, p. 1239) by Winning Hope 80283.
 639 II. (£8.)—W. M. CAZALET, Fairlawne, Tonbridge, for Gipsy Countess 3rd, white, born Jan. 2, bred by A. Morrison, Phingask, Fraserburgh; s. Phingask Comet 100627, d. Gipsy Countess 2nd (vol. 57, p. 563) by Golden Mascot 95330.
 643 III. (£4.)—GEORGE HARRISON, Gainford Hall, Darlington, for Gainford Rosemary, roan, born Jan. 2; s. Proud Broadhooks 109762, d. Rosemary 120th (vol. 56, p. 1254) by Sterling Character 97289.
 636 IV. (£3.)—HIS MAJESTY THE KING, Royal Farms, Windsor, for Golden Bud, red, born Jan. 15; s. First Attempt 105488, d. Golden Fairy (vol. 57, p. 418) by Winsome Lad 82648.
 652 V. (£3.)—WALTER MONTAGU SCOTT, Nether Swell Manor, Stow-on-the-Wold, for Buttercup, roan, born March 27; s. Proud Baron 96572, d. Butterfly 93th (vol. 57, p. 1150), by Ruthven 84681.
 653 R. N. & H. C.—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for Scotch Mist.

Class 97.—Shorthorn Heifers, calved on or between April 1, 1912, and December 31, 1912. [31 entries, 4 absent.]

- 670 I. (£10.)—JOHN GILL, Thorn Farm, Stanton, Penrith, for Fragrance, roan, born Nov. 2; s. Regent 108754, d. Thorn Farm Fragrance (vol. 55, p. 719) by Royal Ruby 96051.
 661 II. (£6.) RICHARD CORNELIUS, Bankfields, Eastham, Cheshire, for Bankfields Jewel, roan, born June 25; s. Village Bean 87681, d. Aldsworth Phantom (vol. 57, p. 591) by Aldsworth Jasper 85147.
 661 III. (£4.)—W. M. CAZALET, Fairlawne, Tonbridge, for Silver Star 2nd, red and little white, born April 15, bred by William Rhodes, Lundholme, Westhouse, Kirkby Lonsdale; s. Leonard of Cluny 109187, d. Silver Star (vol. 56, p. 902) by Full of Promise 88014.
 668 IV. (£3.)—THE EDGCOOTE SHORTHORN CO., LTD., Edgcote, Banbury, for Edgcote Storm Fairy, dark roan, born June 12; s. Snow Storm 110225, d. Mabel 7th (vol. 55, p. 903) by Bletchley King 98112.
 676 V. (£3.)—LORD MIDDLETON, Birdsall, Malton, for Birdsall Lady Waterloo 16th, roan, born May 28; s. Illustrious Count 95587, d. Birdsall Lady Waterloo 9th (vol. 57, p. 837) by Aaron 75978.
 672 R. N. & H. C.—C. E. GUNTER, Tongswood, Hawkhurst, for Tongswood Missie 3rd.

¹ Prizes given by the Shorthorn Society.

² Champion Prize of £20 given by the Shorthorn Society for the best Cow or Heifer in Classes 92-97 and 105-7.

lxxii *Award of Live Stock Prizes at Bristol, 1913.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 98.—Group Class, for the best collection of either three or four Shorthorn Cows or Heifers, bred by Exhibitor. Open to animals entered in Classes 92 to 97 and 103 to 107 only. [7 entries, none absent.]

- 594, 616 634 I. (£15.)—J. DEANE WILLIS, for Jacqueline, Bapton Beauty, and Dauntless Princess.
 585, 602 618, 638 II. (£10.)—RICHARD JAMES BALSTON, for Dewlap, Bess of Bilsington, Bilsington Pink 2nd, and Bilsington Rosemary 233rd.
 601, 636 637, 654 R. N. & H. C.—His MAJESTY THE KING, for Windsor Belle, Golden Bud, Muriel 2nd, and Silver Queen.

Class 99.—Shorthorn Bulls, calved in 1908, 1909, or 1910.
 [31 entries, 10 absent.]

- 600 I. (£10, & R. N. for Champion.)—JOHN HILL, Thorn Farm, Stainton, Penrith, for Montrave Ethling 100441, light roan, born March 13 1909, bred by Sir John Gilmour, Bart., Lunden and Montrave, Leven, Fife-shire, s. Royal Victory 100486, d. Montrave Ethel by Broadhook- Conqueror 85451
 607 II. (£6.)—SIR WALPOLE GREENWELL, Br., Marden Park, Woldingham, Surrey, for Marden Feldon 106130, white, born April 6 1909; s. Ascott Constellation 86184, d. Ruddington Butterfly Sweetheart by Butterfly Victor 80598.
 713 III. (£4.)—RICHARD STRATTON, The Duffryn, Newport, Mon., for Mischief 112570, roan, born March 30 1910, bred by W. T. Garne & Son, Aldsworth, Northleach; s. Pride of Abington 103315, d. Misfortune by Bapton Crown 78388.
 700 IV. (£3.)—GEORGE HARRISON, Gairford Hall, Darlington, for Prince Olaf 2nd 103410, roan, born March 5, 1908, bred by R. W. Bell, Windmill Farm, Congh; s. Prince Olaf 90535, d. Broadhooks F. 3rd by Lord Robert 83958.
 710 V. (£3.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for Birdsall Brigand 107906, roan, born Jan. 26, 1910, bred by Lord Middleton, Bird-all, Malton, s. Birdsall Brewer 90114, d. Bird-all Hazeltop 3rd by Illustrious, Count 86537.
 609 R. N. & H. C.—O. E. GUNTHER, Tonguswood, Hawkhurst, for Windmill Marquis.

Class 100.—Shorthorn Bulls, calved on or between January 1, 1911, and March 31, 1911. [23 entries, 6 absent.]

- 719 I. (£10.)—EDGAR WILLIAM BISHOP, Fifeild, Oxford, for Pierrot 112793, white, born Feb 23; s. Emperor of Huntingtower 88720, d. Fanny 11111 by Near Go 79173.
 721 II. (£6.)—GEORGE HARRISON, Gairford Hall, Darlington, for Golden Fortune 111922, roan, born Jan. 28, bred by O. H. Jolliffe Newnham Grange, Darlington; s. Golden Morning 102375, d. Turret Managled by Challenger 71190
 725 III. (£4.)—LORD FITZJARDINGE, Berkeley Castle, Glos., for Aldsworth Pride 110732, roan, born Jan. 12, bred by W. I. Garne & Son, Aldsworth, Northleach; s. Pride of Abington 103315, d. Crown Princess by Village Coronet 97518.
 722 IV. (£3.)—SIR RICHARD P. COOPER, BT., Shenstone Court, Lichfield, for Hoar Frost 112077, white born Feb. 28, bred by W. Parkin Moore, Whitehall, Menlsgate, Cumberland; s. Keep Smiling 105873, d. Winter Blossom by Lord Ramsden 2nd 99481.
 740 V. (£3.)—A. ROMER WYNN, Rug, Corwen, for Highfields Baron 112082, roan, born Jan. 20, bred by O. W. Kellock, Highfields, Audlem, Cheshire; s. Violet Prince 101003, d. Marden of Highfields 2nd by Scotch Earl 87284.
 730 R. N. & H. C.—W. J. HOSKEN, Pulsack, Hayle, Cornwall, for Hayle Marksman.

Class 101.—Shorthorn Bulls, calved on or between April 1, 1911, and December 31, 1911. [36 entries, 7 absent.]

- 743 I. (£10, & Champion.)—GEORGE CAMPBELL, Hurlhill, Bieldside, Aberdeen, for Woodend Stamp 113755, roan, born May 27, bred by Alex. Crombie, Woodend, New Machur, N.B.; s. Golden Banner 105613, d. Lovely by Goldstream 80670.
 759 II. (£6.)—A. M. & O. J. LAW, Mans of Sanguhar, Forres, N.B., for Sanguhar Dreadnought 112314, dark roan, born May 4; s. Hawthorn Champion 99098, d. North by Scotch Thistle 75584.
 761 III. (£4.)—EARL MANVERS, Holme Pierrepont, Nottingham, for Royal Sovereign 113193, red, born April 6; s. Duke of Kingston 2nd 102088, d. Empress Millicent by Red Emperor 87026.
 744 IV. (£3.)—W. M. CAZALET, Fairlawne, Tonbridge, for Fairlawne Clipper 111726, light roan, born Sept. 27, s. Broadhooks Victor 2nd 101638, d. Elvetbam Clipper 3rd by Lavender Royal 86380.
 741 V. (£3.)—His MAJESTY THE KING, Royal Farms, Windsor, for Proud Warrior 112932, roan, born April 1st; s. Cowslip King 105140, d. Proud Missile 3rd by Royal Wind-or 93289.
 766 R. N. & H. C.—THE DUKE OF NORTHUMBERLAND, K.G. Alnwick Castle, for White Favour.

¹ Prizes given by the Shorthorn Society.

² Champion Prize of £20 given by the Shorthorn Society for the best Bull in Classes 90-103, 108 and 109.

Award of Live Stock Prizes at Bristol, 1913. lxxiii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 102.—Shorthorn Bulls, calved on or between January 1, 1912, and March 31, 1912. [38 entries, 11 absent.]

- 785 I. (£10.)—THE EDGECOTE SHORTHORN CO., LTD., Edgcote, Binbury, for **Edgcote Masterpiece**, white, born Feb. 11; s. Bletchley King 98112, d. Lady Mabel (vol. 57, p. 400) *by* Pride of Avon 80878.
- 782 II. (£6.)—J. H. DEAN & SONS, Heath House, Norton, Lincoln, for **Marquis Pearl**, red, born Jan. 14; s. Sanquhar Pearl 100538, d. Mere Marchioness 2nd (vol. 57, p. 636) *by* Mere Oulph 89208.
- 803 III. (£4.)—RICHARD STRATTON, The Duffryn, Newport, Mon., for **Highflyer**, roan, born March 20; s. Pegasus 106177, d. Maiden's Blush (vol. 56, p. 1151) *by* Renown 93081.
- 789 IV. (£3 & S. P. £10.)—LORD FITZHARDINGE, Berkeley Castle, Glos., for **Brave Marquis**, roan, born Jan. 8; s. Strider Marquis 104102, d. Blanche Rose 36th (vol. 56, p. 678) *by* Royal Waterloo 83083.
- 814 V. (£3.)—JOSHUA A. WILLIAMS, Moor Park, Harrogate, for **Prince Paul**, dark roan, born Jan. 18; s. Proctor 100745, d. Pony (vol. 57, p. 1287) *by* Nabob 103102.
- 783 R. N. & H. C. THE EDGECOTE SHORTHORN CO., LTD., for **Edgcote Conqueror**.
- 777 S. P. (£5.)—CHARLES BATHURST, M.P., Lydney Park, Glos., for **Lydney Majestic** 2nd.

Class 103.—Shorthorn Bulls, calved on or between April 1, 1912, and December 31, 1912. [12 entries, 11 absent.]

- 830 I. (£10.)—LORD MIDDLETON, Birdsall, Malton, for **Birdsall Champion**, red, born May 30; s. Illustrious Count 95537, d. Dowsby Wild Eyes 10th (vol. 57, p. 634) *by* Dowsby Kirklevington Duke 1th 80891.
- 831 II. (£6.)—A. M. & O. J. LAW, Mans of Sanquhar, Forres, N.B., for **Sanquhar Eclipse**, roan, born April 10; s. Hawthorn Champion 99008, d. Zoo 11th (vol. 56 p. 847) *by* Scotch Thistle 73581.
- 835 III. (£4.)—EARL MANVERS, Holme Pierrepont, Nottingham, for **Kingston's Glory**, red roan, born April 6; s. Duke of Kingston 2nd 102088, d. Blanche Beauty 11th (vol. 57, p. 944) *by* Hindledown 76815.
- 837 IV. (£3.)—LORD MIDDLETON, for **Birdsall Columbus**, red, born April 8; s. Illustrious Count 95537, d. Cambridge Waterloo 13th (vol. 57, p. 937) *by* Mohd Gold 87418.
- 829 V. (£3.)—JOHN GILL, Thora Farm, Stanton Fenrith, for **Royal Secret**, dark roan, born May 9; s. Regent 106751, d. Sycamore 7th (vol. 56, p. 964) *by* Prince of Fashion 64587.
- 815 R. N. & H. C.—HIS MAJESTY THE KING, Royal Farms, Windsor, for **Monarch**.

Class 104.—Group Class, for the best collection of either three or four Shorthorn Bulls, bred by Exhibitor. Open to animals entered in Classes 99 to 103 108 and 109 only. [6 entries, none absent.]

- 762, 763, 830 837 I. (£15.)—LORD MIDDLETON, for **Birdsall Bacchus**, **Birdsall Ceresus** 2nd, **Birdsall Champion** and **Birdsall Columbus**.
- 765, 766, 800 II. (£10.)—THE DUKE OF NORTHUMBERLAND, K.G., for **Leading Favourite**, **White Favour** and **Alnwick Piper**.
- 744, 822, 823 R. N. & H. C.—W. M. CAZALET, for **Fairlawne Clipper**, **Fairlawne Diadem** and **Fairlawne Keepsake**.

Dairy Shorthorns.

Class 105.—Shorthorn Dairy Cows (in-milk), calved in or before 1908.
[21 entries, 7 absent.]

- 878 I. (£10, & Champion.)—CAPTAIN ARNOLD WILLS, Thornby Hall, Northampton, for **Ringlet** 9th (vol. 82, p. 711), red and little white, born June 12, 1904, calved May 23, 1913, bred by W. Forster, Bull's Hill, Allendale; s. Silver Coin 79083, d. Ringlet 8th *by* Lord Somerset 4th 72028.
- 860 II. (£6, & R. N. for Champion.)—C. R. W. ADKINS, Babraham Hall, Cambridge, for **Heather Queen** 3rd (vol. 56, p. 426), red, born Aug. 28, 1901, calved June 10, 1913, bred by Mrs. Nicholson, Gilt's Shop, Westmorland; s. Golden Cherry's Prince 70591, d. Heather Queen *by* Bolton Beau 65180.
- 808 III. (£4.)—SAMUEL SANDAY, Puddington Hall, Chester, for **Janetta** (vol. 57, p. 1141), red, born Dec. 19, 1907, calved May 26, 1913; s. Barrington Prince 90834, d. Janetta 63rd *by* Florentia's Prince 16th 74560.

¹ Special District Prizes given by the Shorthorn Society (£10), and the Gloucestershire Agricultural Society (£5), for the two best Bulls in Classes 102, 103, and 108, the property of Exhibitors residing in Gloucestershire.

² Prizes given by the Shorthorn Society.

³ Champion Prize of £10 given by the Dairy Shorthorn (Coates's Herd Book) Association for the best Cow or Heifer in Classes 105, 106 and 107.

lxxiv *Award of Live Stock Prizes at Bristol, 1913.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

862 IV. (£3).—E. S. GODSELL, Salmon's Brewery, Stroud, for Elsie Foggathorpe (vol. 56, p. 807), light roan, born Sept. 13, 1907, calved June 5, 1913, bred by T. Hunter, Dolphinlee Farm, Lancaster; s. Duke of Lancaster 91553, d. Primrose 3rd by Silver King 77887.

864 R. N. & H. C.—R. W. HOBBS & SONS, Kelmscott, Lechlade, for Solo 60th.

868, 887, 908 (Cup.¹)—SAMUEL SANDAY, for Janetta, Barrington Belle, and Barrington Snowstorm.

915, 889, 864 (E. N. for Cup.¹)—R. W. HOBBS & SONS, for Kelmscott Juggler, Spotless 31st, and Solo 60th.

Class 106.—*Shorthorn Dairy Cows (in-milk), calved in 1909.*

[11 entries, 3 absent.]

887 I. (£10).—SAMUEL SANDAY, Puddington Hall, Chester, for Barrington Belle (vol. 56, p. 1103), roan, born June 20, calved May 23, 1913; s. Salmon's Freemason 100520, d. Barrington Princess 4th by Sir Barrington 5th 75642.

891 II. (£6).—FRANK H. THORNTON, King-thorpe Hall, Northampton, for Jewel 3rd, dark roan, born Feb. 14, calved May 6, 1913, bred by the Cumberland County Council, Newton Rigg, Penrith; s. Eden Minster 11860, d. Jewel 2nd by Traveller 80113.

889 III. (£4).—R. SILCOCK & SONS, Thornton Hall Farm, Poulton-le-Fylde, for Fylde Morwenna 2nd (vol. 56, p. 117), red roan, born Jan. 10, calved May 13, 1913; s. Blood Royal 3rd 94356, d. Eaglethorpe Morwenna by Eaglethorpe Retree 85811.

886 R. N. & H. C.—R. W. HOBBS & SONS, Kelmscott, Lechlade, for Melody 13th.

Class 107.—*Shorthorn Dairy Heifers (in-milk), calved in or after 1910.*

[14 entries, 3 absent.]

895 I. (£10).—J. A. ATTWATER, Dry Leaze, Cirencester, for Leazow Musical (vol. 57, p. 455), red, born May 31, 1910; s. Puddington Minstrel 100110, d. Pianola by Volunteer 21st 82589.

899 II. (£6).—R. W. HOBBS & SONS, Kelmscott, Lechlade, for Spotless 31st (vol. 57, p. 823), red and little white, born Sept. 3, 1910, calved May 21, 1913; s. Village Swell 8th 97560, d. Spotless 30th by Kelmscottian 18th 92094.

893 III. (£4).—C. E. W. ADEANE, Babraham Hall, Cambridge, for Babraham Fog (vol. 57, p. 425), roan, born Jan. 13, 1910, calved May 16, 1913; s. Knight of Ivanhoe 92167, d. Mist by Archer 80352.

898 IV. (£3).—R. W. HOBBS & SONS, for Laura 21st, roan, born Oct. 14, 1910, calved June 3, 1913; s. M. C. 12th 106182, d. Laura 14th by Village Lad 93746.

Class 108.—*Shorthorn Bulls, calved in 1911.²* [3 entries.]

908 I. (£10).—SAMUEL SANDAY, Puddington Hall, Chester, for Barrington Snowstorm 110940, white, born Sept. 4; s. Oxford Record 106450, d. Barrington Cranford 14th by Beau Sabreur 74049.

906 II. (£6).—C. E. W. ADEANE, Babraham Hall, Cambridge, for Babraham Diplomat 110831, roan, born July 18; s. Babraham Heather Prince 101330, d. Babraham Dorcon by Babraham Pearl 94100.

907 III. (£4).—THE EARL OF DERBY, Knowsley, Prescot, for Knowsley J. J., roan, born June 1; s. Babraham Judge 104603, d. Babraham Jessamine (vol. 55, p. 438) by Babraham Earl Bates 94095.

Class 109.—*Shorthorn Bulls, calved in 1912.* [11 entries, 2 absent.]

915 I. (£10).—R. W. HOBBS & SONS, Kelmscott, Lechlade, for Kelmscott Juggler, dark roan, born April 2; s. Trickster 4th, d. Hawthorn 7th (vol. 58, p. 956) by Village Lad 93746.

913 II. (£6).—E. S. GODSELL, Salmon's Brewery, Stroud, for Salmon's Victor, dark roan, born Feb. 5; s. Salmon's Heir 110079, d. Waterloo 5th (vol. 57, p. 737) by Vain Victor 93716.

911 III. (£4).—J. A. ATTWATER, Dry Leaze, Cirencester, for Fairylad, roan, born March 21; s. Lord Paulful 109243, d. Fairy Queen (vol. 57, p. 454) by Pauldit 75234.

914 R. N. & H. C.—ROBERT HEATH, Biddulph Grange, Biddulph, Staffs, for Puddington Rosador.

Class 110.—*Milk Yield Prizes, open to Shorthorn Cows and Heifers entered in Classes 92, 93, 105, 106, and 107 only.* [20 entries, 5 absent.]

868 I. (£10).—C. E. W. ADEANE, Babraham Hall, Cambridge, for Babraham Eva Bates (vol. 57, p. 423), red and white, born Sept. 9, 1905, calved June 11, 1913; s. Prince Pericles 24th 88953, d. Lady Evelyn Bates by Red Lord 15th 77593.

887 II. (£6).—SAMUEL SANDAY, for Barrington Belle. (See Class 106.)

¹ Challenge Cup given through the Dairy Shorthorn (Coates's Herd Book) Association for the best Group of two Cows or Heifers and one Bull in Classes 103-100. Two at least of the Animals must have been bred by exhibitor.

² Prizes given by the Dairy Shorthorn (Coates's Herd Book) Association.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

873 III. (£4).—J. M. SPRICKLAND, Warren House, Blandby, Easingwold, for Brandys's Princess (vol. 57, p. 1208), red, born Feb. 18, 1905, calved April 19, 1913; s. Bapton Judge 82788 d. Prince 3 Lily by Coming Star 57082

877 E. N. & H. C.—JOSHUA A. WILLIAMS, Moor Park, Harrogate, for Roseleaf 2nd.

Lincolnshire Red Shorthorns.¹

N.B.—In the Lincolnshire Red Shorthorn Classes, the number inserted within brackets after the name of an animal indicates that the animal is entered in Coates's Herd Book. A number without brackets indicates that the animal is registered in the Lincolnshire Red Shorthorn Herd Book.

Class 111.—Lincolnshire Red Shorthorn Cows (in-milk), calved in or before 1909.
[8 entries, 1 absent.]

920 I. (£10).—AUGUSTUS PH. BRANDT, Bletchingley Castle, Surrey for Bletchingley Boadicea (vol. 18, p. 268), born June 9, 1909, calved March 3, 1913; s. King Louis 5457, d. Stungot Bloom 10th by Red Chisel 2611.

927 II. (£6).—J. G. WILLIAMS, Pendley Manor, Tring, for Pendley Princess (vol. 17, p. 357), born Aug. 20, 1909, calved March 28, 1913, bred by T. H. B. Freshney, South Somersvot, Louth; s. Grange Prince 484, d. Saltfleet Bona by Saltfleet Bonus 3582.

923 III. (£4).—PERCY HENSAMAN, Fulletby Grange, Horncastle, for Fulletby Peony Bat (vol. 13, p. 208), born March 8, 1908, calved Jan. 27, 1913, bred by Charles Hensman; s. Scampton Formula 4502, d. Fulletby Peony B by Poolham Buttermen 9th 1978.

924 E. N. & H. C.—HENRY NEESHAM, Lodge Farm, Canwick, Lincoln, for Canwick Queen.

Class 112.—Lincolnshire Red Shorthorn Heifers (in-milk), calved in 1910.
[2 entries.]

920 I. (£10, & E. N. for Champion.²)—J. G. WILLIAMS, Pendley Manor, Tring, for Blue Eye 4th (vol. 18, p. 313), born Jan. 17, calved Oct. 2, 1912, bred by J. W. Farrow & Son, Strubby, Alford; s. Red Chisel 3rd 4939, d. Blue Eye 3rd by Under Porter 3128.

928 II. (£6).—AUGUSTUS PH. BRANDT, Bletchingley Castle, Surrey, for Bletchingley Circe (vol. 18, p. 267), born May 10, calved Jan. 22, 1913, bred by Joseph Bowser, Frithville, Boston; s. Buxton Rupert 104946, d. Deeping Jessie by Croft Sunrise 3831.

Class 113.—Lincolnshire Red Shorthorn Heifers, calved in 1911.
[5 entries, none absent.]

934 I. (£10, & Champion.²)—J. G. WILLIAMS, Pendley Manor, Tring, for Strubby Violet 2nd, born July 20, bred by J. W. Farrow and Sons, Strubby, Alford; s. Scampton Jubal 8324, d. Strubby Violet by Strubby Hebrew.

932 II. (£6).—PERCY HENSAMAN, Fulletby Grange, Horncastle, for Fulletby Hilda 3rd (vol. 18, p. 285), born Jan. 24; s. Billing Masterpiece 101533, d. Keal Hilda by Scampton Excavator 4081.

930 III. (£4).—AUGUSTUS PH. BRANDT, Bletchingley Castle, Surrey, for Bletchingley Doris (vol. 18, p. 258), born May 26; s. Bletchingley Brennus 6596, d. Deeping Daisy 3rd by Highby Cymical 5165.

931 E. N. & H. C. AUGUSTUS PH. BRANDT, for Sherwood Lady.

Class 114.—Lincolnshire Red Shorthorn Heifers, calved in 1912.
[5 entries, none absent.]

930 I. (£10).—J. G. WILLIAMS, Pendley Manor, Tring, for Pendley Duchess (vol. 19, p. 380), born Feb. 9, bred by W. G. Smyth, Elkington Hall, Louth; s. Grimblethorpe Scamp 2nd 6825, d. Grimblethorpe Duchess 2nd by Scampton Angler 2327.

940 II. (£6).—J. G. WILLIAMS, for Pendley Rose (vol. 19, p. 381), born Feb. 24, bred by W. B. Swallow, Wootton Lawn, Ulceby; s. Scampton Luxury 7884, d. Horkstow Lillac by Bumper 2nd 1703.

938 III. (£4).—PERCY HENSAMAN, Fulletby Grange, Horncastle, for Fulletby Hilda 4th (vol. 19, p. 335), born Jan. 23; s. Scampton Exile 4082, d. Keal Hilda by Scampton Excavator 4084.

935 E. N. & H. C.—AUGUSTUS PH. BRANDT, Bletchingley Castle, Surrey, for Bletchingley Electra.

Class 115.—Lincolnshire Red Shorthorn Cows or Heifers (in-milk), calved in or before 1910, showing the best milking properties. [9 entries, 1 absent.]

941 I. (£10).—JOHN EVANS, Burton, Lincoln, for Burton Beauty 3rd (vol. 17, p. 304), born May 13, 1908, calved June 9, 1913; s. Persian Ruby 6570.

942 II. (£8).—JOHN EVANS, for Burton Pride 7th (vol. 17, p. 303), born March 1, 1905, calved May 19, 1913, bred by R. B. Bygott, Wootton Lawn, Ulceby; s. Burton Pride 2441, d. by Ranby Red 2nd 2809.

¹ £20 towards these Prizes were given by the Lincolnshire Red Shorthorn Association.

² Champion Prize of £10 given by the Lincolnshire Red Shorthorn Association for the best Cow or Heifer in Classes 111-115.

lxxvi *Award of Live Stock Prizes at Bristol, 1913.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

946 III. (£4.)—CHARLES F. SCORER, Whitehall, Bracebridge Heath, Lincoln, for *Bracebridge No. 3 B* (vol. 12, p. 206), born Sept. 28, 1908, calved April 6, 1913, bred by Fred Scorer, Sudbrook, Lincoln; s. Weston IXL, 2nd 2368, d. Sudbrook No. 63 by Withern Monarch 574.

945 R. N. & H. C.—HENRY NEESHAM, Lodge Farm, Canwick, Lincoln, for *Canwick Milker 2nd*.

Class 116.—Lincolnshire Red Shorthorn Bulls, calved in 1907, 1908, 1909, or 1910. [7 entries, 1 absent.]

954 I. (£10, & Champion.)¹—BENJAMIN ROWLAND, Ivy House, Wainfleet, for *Dunsby Red 2nd* 6016, born March 28, 1907, bred by J. W. Measures, Dunsby, Bourne; s. Santhorpe Red 12th 4752, d. by Weston Nonpareil King 2066.

956 II. (£6.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for *Scampton King of the Valley*, born in March, 1906, bred by G. E. Sanders, Scampton House, Lincoln; s. Brandon Grenadier 4274, d. by Kedlington Ruby 1243.

952 III. (£4.)—HENRY NEESHAM, Lodge Farm, Canwick, Lincoln, for *Burton Benedict* 7381, born June 16, 1910, bred by J. G. Barlow, Burton, Lincoln; s. Burton Baronet 6053, d. Canwick Queen by Hullington Yeoman 2223.

951 R. N. & H. C.—EARL FITZWILLIAM, Wentworth, Rotherham, for *Wentworth Champion*.

Class 117.—Lincolnshire Red Shorthorn Bulls, calved in 1911. [3 entries.]

958 I. (£10, & R. N. for Champion.)¹—LT COL. HAROLD TAGART, D.S.O., Old Sneed Park, Bristol, for *Sherwood King of Hearts* 8527, born March 25, bred by L. W. Stephenson, South Thoresby, Alford; s. Scampton King of Hearts 7121, d. by General Buller 2206.

957 II. (£6.)—JOHN EVENS, Burton, Lincoln, for *Normanby Felix* 8481, born Jan. 25, bred by John Byron, Normanby-le-Wold; s. Redchalk 8275, d. by Croft Marvel 3829.

959 III. (£4.)—J. G. WILLIAMS, Pendley Manor, Tring, for *Oroston Ruby* 33rd 8839, born Sept. 22, bred by Frank Bourne, Oroston House, Brocksby; s. Scampton King of the Ruby 7122, d. by Neptune 2nd 4927.

Class 118.—Lincolnshire Red Shorthorn Bulls, calved in 1912. [4 entries, none absent.]

960 I. (£10.)—AUGUSTUS PH. BRANDT, Bletchingley Castle, Surrey, for *Bletchingley Eros* 5782, born Feb. 7; s. Bletchingley Brumm 6585, d. Bletchingley Aurora (vol. 15, p. 268) by Moreton Premier 55-2.

962 II. (£6.)—CHANDON DE PARATIGNI, St. Vincent's, Grantham, for *Elkington Scamp* 4988, born March 26, bred by W. G. Smyth, Elkington Hall, Louth; s. Grimbethorpe Scamp 2nd 4825, d. by Withern Box 4th 5061.

961 III. (£4.)—AUGUSTUS PH. BRANDT, for *Bletchingley Euclides* 8783, born in March, bred by William Dunn & Son, Kirton, Boston; s. Ruby's Benjamin 7813, d. Kirton Venus by Partney Monarch 2nd 6093.

Class 119.—Milk Yield Prizes, open to Lincolnshire Red Shorthorn Cows and Heifers entered in Classes 111, 112 and 115 only. [10 entries, none absent.]

944 I. (£10.)—HENRY NEESHAM, Lodge Farm, Canwick, Lincoln, for *Canwick Cherry 2nd* (vol. 16, p. 807), born April 3, 1906, calved Jan. 26, 1913; s. Snapshot 4100, d. Canwick Cherry 1st by Kirkby Monarch 2558.

945 II. (£6.)—HENRY NEESHAM, for *Canwick Milker 2nd* (vol. 17, p. 325), born Jan. 27, 1907, calved May 3, 1913; s. Snapshot 4100, d. Canwick Milker 1st by Kirkby Monarch 2558.

949 III. (£4.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for *Sherwood Broadhooks*, born Jan. 20, 1906, calved June 1, 1913; s. Kirkby Abbott 2012, d. by Golden Shield 2nd (7053).

921 R. N. & H. C.—JOHN EVENS, Burton, Lincoln, for *Coddington Rosemary*.

Herefords.²

Class 120.—Hereford Cows (in-milk), calved in or before 1909. [1 entries, 1 absent.]

965 I. (£10, & Champion.)³—JOHN GEORGE COOKE-HILL, Shelsley Bank, Stanford Bridge, Worcester, for *Shelsley Primula* (vol. 11, p. 308), born Jan. 27, 1909, calved Jan. 13, 1913; s. Shelsley 20180, d. Primrose by Kinnerley King 20116.

¹ Champion Prize of £10 given by the Lincolnshire Red Shorthorn Association for the best Bull in Classes 116-118.

² £50 towards these Prizes were given by the Hereford Herd Book Society.

³ Champion Prize of £10 10s. given by the Hereford Herd Book Society for the best Cow or Heifer in Classes 120-123.

Award of Live Stock Prizes at Bristol, 1913. lxxvii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

961 II. (£6.) FRANK BILBY, Hardwicke (Grange, Shrewsbury, for Ivy Green 2nd (vol. 43, p. 199) born Jan. 18, 1907, calved June 2, 1913; s. Nelson 21625, d. Ivy Berry by Happy Hampton 19097.

962 III. (£1.)—THE EARL OF COVENTRY, Croome Court, Severn Stoke, Worcester, for Merrimot (vol. 13, p. 284) born March 23, 1903, calved May 1, 1913; s. Fortunio 21396, d. Mischief by Mischief 19395.

Class 121.—Hereford Heifers (in-milk), calved in 1910.

[5 entries, none absent.]

972 I. (£10, & R. N. for Champion,¹)—KENNETH W. MILNES, Stanway Manor, Church Stretton, for May Morn (vol. 12, p. 806), born May 1, calved March 26, 1913; bred by W. Thomas, The Hives, Sully; s. King Character 3rd 28946, d. Fusce 2nd by Star 23451.

968 II. (£6.)—JOHN GEORGE COOKE-HILL, Shelsley Bank, Stanford Bridge, Worcester, for Shelsley Florence (vol. 42, p. 369), born Jan. 11, calved Jan. 6, 1913; s. Eaton Sovereign 28832, d. Florence by Gambler 20639.

971 III. (£4.)—MRS. ELLEN MEDLICOTT, Bodenham, Herefordshire, for Virginia 3rd (vol. 12, p. 806), born Feb. 26, calved May 4, 1913; s. Locarno 20797, d. Virginia by Lancer 21515.

970 E. N. & H. C.—MRS. ELLEN MEDLICOTT, for Sunlight 2nd.

Class 122.—Hereford Heifers, calved in 1911. [6 entries, none absent.]

973 I. (£10.)—ALLEN K. HUGHES, Wintercott, Leominster, for Misty (vol. 43, p. 464), born Jan. 22, s. Ronald 26160, d. Margery by Pearl King 24192.

976 II. (£6.)—D. A. THOMAS, Llanwern, Newport, Mon., for Fantastical (vol. 43, p. 497), born Jan. 11, bred by Rees Keene, Llanyhangel Court, Rogiet, Mon.; s. Review 27821, d. Pandanus by Whittern Mark-man 23859.

971 III. (£4.)—KENNETH W. MILNES, Stanway Manor, Church Stretton, for Gem's Ruby (vol. 13, p. 518), born Jan. 4; s. Bloodstarue 27351, d. Gemima by Go-chen 17284.

978 E. N. & H. C.—D. A. THOMAS, for Pansy 18th.

Class 123.—Hereford Heifers, calved in 1912. [15 entries, 6 absent.]

981 I. (£10.)—JOHN GEORGE COOKE-HILL, Shelsley Bank, Stanford Bridge, Worcester, for Shelsley Queen 2nd born Jan. 11; s. Shelsley 26480, d. Cripsey Queen (vol. 42, p. 370), by Evellion 20616.

983 II. (£6.)—D. A. THOMAS, Llanwern, Newport, Mon., for Plume, born Jan. 5; s. On-sland 27741, d. Plum-stone (vol. 42, p. 809) by Whittern Mark-man 23838.

980 III. (£4.)—KENNETH W. MILNES, Stanway Manor, Church Stretton, for Stanway Belle, born Jan. 21, bred by D. A. Thomas, Llanwern, Newport, Mon.; s. North Star 27721, d. Best Love (vol. 43, p. 741), by Best Man 21398.

989 IV. (£3.)—KENNETH W. MILNES, for Gem's Radiance, born Feb. 6; s. Sir James 20189, d. Gemima (vol. 13, p. 518) by Go-chen 17284.

988 E. N. & H. C. MRS. ELLEN MEDLICOTT, Bodenham, Herefordshire, for Blossom 4th.

Class 124.—Hereford Bulls, calved in 1908, 1909, or 1910.

[10 entries, 3 absent.]

1003 I. (£10, & Champion,²)—HENRY W. TAYLOR, Showle Court, Ledbury, for Quarto 27143, born April 6, 1908; s. Confluence 21208, d. Maidenhair by Samson 20312.

991 II. (£6.)—HIS MAJESTY THE KING, Royal Farms, Windsor, for Avondale 28008, born Jan. 2, 1910, bred by King Edward VII; s. Admiral 23256, d. Elsie by Lord Lieutenant 22323.

998 III. (£4.)—SIR J. R. G. COTTERELL, BT., Garnons, Hereford, for Comet 28175, born April 13, 1910; s. All Bright 24318, d. Stella by Marcellus 23353.

999 E. N. & H. C.—THE EARL OF COVENTRY, Croome Court, Severn Stoke, for Dolly-mount.

Class 125.—Hereford Bulls, calved in 1911. [14 entries, 3 absent.]

1015 I. (£10, & R. N. for Champion,²)—HENRY MOORE, Shucknall Court, Hereford, for Shucknall Victor 29383, born Feb. 1; s. Moorend King 26321, d. Blanche 8th by Perry Prince 24868.

1008 II. (£6.)—SIR FREDERICK CAWLEY, BT. M.P., Berrington Hall, Leominster, for Berrington Ringer 28892, born Jan. 20; s. Albatross 19193, d. Happy Ringer by Happy Hampton 19097.

1008 III. (£4.)—SIR J. R. G. COTTERELL, BT., Garnons, Hereford, for First Lord 20105, born April 14; s. Administrator 27298, d. Ladylove by Old Sort 24826.

1004 IV. (£3.)—HIS MAJESTY THE KING, Royal Farms, Windsor, for Ronald 29335, born Feb. 6; s. Happy King 26204, d. Rosa by Soudan 22592.

1016 E. N. & H. C.—DE F. PENNEFATHER, Kinnersley Castle, Hereford, for Ringer.

¹ Champion Prize of £10 10s. given by the Hereford Herd Book Society for the best Cow or Heifer in Classes 120-123.

² Champion Prize of £10 10s. given by the Hereford Herd Book Society for the best Bull in Classes 124-127.

lxxviii Award of Live Stock Prizes at Bristol, 1913.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 126.—*Hereford Bulls, calved in January or February, 1912.*

[23 entries, 8 absent.]

- 1040 I. (£10.)—T. P. SMITH, The Vern, Bodenham, Herefordshire, for Kinsham Surprise, born Jan. 3, bred by J. H. Edwards, Kinsham, Presteigne; s. Eaton Sensation 21568, d. Lively 3rd (vol. 40, p. 388) by Fine Lad 19414.
 1024 II. (£6.)—JOHN GEORGE COOKE-HILL, Shelsley Bank, Stanford Bridge, Worcester, for Shelsley Primus, born Jan. 17; s. Shelsley 26180, d. Primrose (vol. 42, p. 371) by Kinnersley King 20116.
 1038 III. (£4.)—HENRY MOORE, Shucknall Court, Hereford, for Shucknall Earl, born Feb. 14; s. Moorend King 26321, d. Violet (vol. 41, p. 379) by Barnbrooke 24376.
 1027 IV. (£3.)—THE EARL OF COVENTRY, Oorome Court, Severn Stoke, Worcester, for Valet, born Jan. 25; s. Dollymount 27500, d. Value (vol. 43, p. 255) by Maxwell 21175.
 1037 V. (£3.)—HENRY MOORE for Shucknall Don, born Jan. 21; s. Moorend King 26321, d. Shucknall Queenie 2nd (vol. 41, p. 583) by Barnbrooke 24375.
 1018 R. N. & H. O.—FRANK BIBBY, Hardwicke Grange, Shrewsbury, for Clive Count 4th.

Class 127.—*Hereford Bulls, calved in 1912, on or after March 1.*

[12 entries, 4 absent.]

- 1046 I. (£10.)—JAMES FARMER GRIFFITHS, Brick House, Preston Wynne, Hereford, for Sea King, born March 1; s. Sealog 25757, d. Fieda 2nd by Alderman 21913.
 1041 II. (£8.)—HIS MAJESTY THE KING, Royal Farms, Windsor, for Bellman, born April 2; s. Broadward Gambler 28894, d. Bellatrix (vol. 42, p. 257) by Fore-Lad 24035.
 1049 III. (£4.)—ALLEN F. HUGHES, Wintercott, Leominster, for Lemberg, born April 6; s. Lucus 27673, d. Lady Emily (vol. 43, p. 464) by Portrane 25619.
 1052 IV. (£3.)—CHARLES T. PULLEY, Lower Eaton, Hereford, for Eaton Prospect, born March 13; s. Eaton Masterpiece 25315, d. Loyalty 2nd (vol. 43, p. 456) by Eaton Defender 2nd 20602.
 1042 R. N. & H. O.—SIR FREDERICK CAWLEY, BT., M.P., Berrington Hall, Leominster, for Constitution 2nd.

Devons.¹

Class 128.—*Devon Cows or Heifers (in-milk), calved in or before 1910.*

[11 entries, 1 absent.]

- 1061 I. (£10.)—MRS. A. C. SKINNER & SON, Pound, Bishop's Lydeard, for Pound Fillpan 2nd 23040, born Sept. 23, 1908, calved Jan. 14, 1913; s. Capton Ploughboy 1123, d. Fillpan 17196, by Johnny come-quick 3458.
 1053 II. (£8.)—HIS MAJESTY THE KING, Royal Farms, Windsor, for Beauty 2nd 23183, born Jan. 4, 1909, calved April 17, 1913, bred by William Burden, Ker-cott, Barnstaple; s. Bickley Tutor 5981, d. Beauty, by Buller 4723.
 1054 III. (£4.)—HIS MAJESTY THE KING, for Capton Sally 21180, born March 30, 1901, calved Jan. 19, 1913, bred by Alfred Bowerman, Capton, Williton; s. Capton Bellringer 4911, d. Sally 15571 by Starlight 3514.
 1057 R. N. & H. O.—W. E. MALLETT, Rainbow Wood, Bath, for Outsey Brassy 3rd.

Class 129.—*Devon Heifers, calved in 1911.* [10 entries, none absent.]

- 1064 I. (£10, & R. N. for Champion.)—HIS MAJESTY THE KING, Royal Farms, Windsor, for Fancy 24323, born Feb. 10; s. Capton Ploughboy 1123, d. Fancy 17538 by Councillor 3407.
 1073 II. (£8.)—SIR GILBERT A. H. WILLS, BT., M.P., Northmoor, Dulverton, for Northmoor Trilby 28372, born Jan. 3; s. Northmoor Royal 5873, d. Tottie 21136 by Chirman 4382.
 1065 III. (£4.)—ELAND CLATWORTHY, Outsey, Trull, Taunton, for Cherry 25612, born Feb. 15, bred by Charles L. Hancock, Cothelstone, Taunton; s. Crumder 4164, d. Cothelstone Chaff 2712 by Bickley Opal 4533.
 1068 R. N. & H. O.—CHARLES MORRIS, Highfield Hall, St. Albans, for Capton Daisy.

Class 130.—*Devon Heifers, calved in 1912.* [8 entries, 1 absent.]

- 1074 I. (£10, & Champion.)—LEWIS HENRY ALFORD, Horridge, Ashford, Barnstaple, for Horridge Belle 25520, born Feb. 25; s. Hall Curly Boy 8732, d. Suffragette 22180 by Capton Sunny Jim 5182.
 1075 II. (£8.)—ROBERT BRUFORD, Nerrol, Taunton, for Nerrols Ruby 25572, born Feb. 29; s. Stockleigh Goldfinder 7288, d. Little Goldencup 21124 by Chestnut 3705.
 1076 III. (£4.)—ELAND CLATWORTHY, Outsey, Trull, Taunton, for Outsey Bella 25644, born Jan. 11; s. Roadwater Prince 6534, d. Brassy 5th 18720 by Duke of Dorchester 4388.
 1077 R. N. & H. O.—W. E. MALLETT, Rainbow Wood, Bath, for Rainbow Blossom.

¹ £50 towards these Prizes were given by the Devon Cattle Breeders' Society.

² Champion Prize of £10 10s. given by the Devon Cattle Breeders' Society for the best Cow or Heifer in Classes 128-131.

Award of Live Stock Prizes at Bristol, 1913. lxxix

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 131.—*Devon Dairy Cows (in-milk) calved in or before 1910.*

[9 entries, 1 absent.]

- 1086 I. (£10.)—JOHN H. CHICK, Wynford Eagle, Dorchester, for Wynford Toby A 110, born in 1905 calved April 27, 1913.
 1081 II. (£8.)—JOHN H. CHICK, for Curly A 256, born in Jan., 1903, calved May 12, 1913, breeder unknown.
 1080 III. (£4.)—LOBAM BROTHERS, Aylesbeare, Exeter, for Orange A 318, age and breeder unknown, calved April 18, 1913.

Class 132.—*Devon Bulls, calved in 1908, 1909, or 1910.* [3 entries.]

- 1093 I. (£10.)—VISCOUNT PORTMAN, Bryanston, Blandford, for Bryanston Amber 6271, born August 6, 1908; s. Bryanston Ajax 5974, d. Goldcup 19044 by Major 4250.
 1092 II. (£6.)—CHARLES MORRIS, Highfield Hall, St. Alban., for Highfield Victor 7148, born Jan. 4, 1910; s. Pound Lord Brassy 5th 5823, d. Highfield Countess 21522 by Pound Monarch 5080.
 1091 III. (£4.)—SAMUEL KIDNER, Bickley, Milverton, Somerset, for Stockleigh Goldfinder 7208, born May 23, 1909, bred by William Tuckett, Stockleigh Pomeroy, Crediton; s. Cronje 5470, d. Daisy 23147 by Capton Harold 4738.

Class 133.—*Devon Bulls, calved in 1911.* [8 entries, 2 absent.]

- 1094 I. (£10, & R. N. for Champion.)¹—HIS MAJESTY THE KING, Royal Farms, Windsor, for Star of Windsor 7530, born April 12, 1911; s. Pound Monk 6500, d. Capton Sally 21180 by Capton Bellringer 4911.
 1095 II. (£6.)—ELAND OLATWORTHY, Outsey, Trull, Taunton, for Commander 7649, born Jan. 20, bred by Charles L. Luncock Oothelstone, Taunton; s. Favourite 5774, d. Curly 20740 by Duke of Park 4021.
 1101 III. (£4.)—SIR GILBERT A. H. WILLS, Bart., M.P., Northmoor, Dulverton, for Northmoor Royal Standard 7477, born Jan. 1; s. Northmoor Royal 5873, d. Oothelstone Trump 20021 by Lord Culverhay 3469.
 1100 R. N. & H. C.—VISCOUNT PORTMAN, Bryanston, Blandford for Marmion.

Class 134.—*Devon Bulls, calved in 1912.* [13 entries, 2 absent.]

- 1113 I. (£10, & Champion.)¹—MRS. A. C. SKINNER & SON, Pound, Bishop's Lydeard, for Pound Cowboy 7827, born Jan. 11; s. Lord Bob 7179, d. Pound Cowslip 8th 23865 by Pound Radiator 8109.
 1103 II. (£6.)—ELAND OLATWORTHY, Outsey, Trull, Taunton, for Kernel, born Jan. 3, bred by Alfred Bowrman, Capton, Williton; s. Capton Showman 6610, d. Capton Plum 23245 by Capton Bellringer 4911.
 1107 III. (£4.)—W. E. MALLETT, Rainbow Wood, Bath, for Rainbow Hero 7841, born Jan. 2; s. Ruby King 7204, d. Heroine 22218 by Fancy Free 5240.
 1114 R. N. & H. C.—SIR GILBERT A. H. WILLS, Bart., M.P., Northmoor, Dulverton, for Northmoor Vanguard.

Class 135.—*Milk-yield Prizes, open to Devon Cows and Heifers entered in Classes 128 and 131 only.* [9 entries, none absent.]

- 1085 I. (£10.)—JOHN H. CHICK, Wynford Eagle, Dorchester, for Favourite, born Jan. 15, 1907, calved April 3, 1913, bred by James Broughton, Down Close Farm, North Perrott, Grewkerne.
 1088 II. (£8.)—JOHN H. CHICK, for Wynford Toby. (See Class 131.)
 1083 III. (£4.)—VISCOUNT ORETWYND, Wyndthorpe, Doncaster, Compton Lovely 21874, born Feb. 5, 1904, calved June 10, 1913, bred by John Chick, Compton Valence, Dorchester; s. Compton Jupiter 4948, d. Compton Lofly 19333 by Compton Masher 4300.
 1080 R. N. & H. C.—LOBAM BROTHERS for Orange. (See Class 131.)

South Devons.²

Class 136.—*South Devon Cows or Heifers (in-milk), calved in or before 1910.* [7 entries, 1 absent.]

- 1115 I. (£10.)—DAVID CAMP & SONS, Widland, Modbury, South Devon, for Orange Girl 9775, born March 1, 1910, calved Jan. 15, 1913; s. Henry 8th 8179, d. Widland Sunbeam 8rd 7008 by Happy Harry 2632.
 1118 II. (£6.)—ANDREW ROGERS, Brownstone, Yealampton, Plymouth, for Molly 8052, born Dec. 10, 1907, calved Nov. 12, 1912, bred by W. F. Sobey, Treant, Liskeard; s. Sally's Champion 2491, d. Cheerful 4th 8182 by Renown 1536.
 1116 R. N. & H. C.—BEN LUSCOMBE, Langston, Kingston, Kingsbridge, for Cherry 8rd.

¹ Champion Prize of £10 10s. given by the Devon Cattle Breeders' Society for the best Bull in Classes 132-134.

² £20 towards these Prizes were given by the South Devon Hard Book Society.

lxxx *Award of Live Stock Prizes at Bristol, 1913.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 137.—South Devon Heifers, calved in 1911. [8 entries, 2 absent.]

- 1126 I. (£10, & R. N. for Champion.)—F. B. MILDMAI, M.P. Flete, Ivybridge, for *Camelia* 2nd 10061, born Feb 26; s. Bulleigh Prince 3109, d. *Camelia* 8591 by Golden King 2621.
 1125 II. (£6.)—B. BUTLAND Leigham, Plympton, Devon, for *Handsome* 10th 10570, born May 12; s. Henry 7th 3178, d. *Handsome* 6th 8301 by Lo Ben 2167.
 1125 III. (£4.)—H. HAWKEN & SON, Okenbury, Kingston, Kingsbridge, for *Dairymaid* 3rd 10815, born Feb. 10; s. Sunny Jim 3316, d. *Dairymaid* 8481 by Elector 2351.
 1127 R. N. & H. C.—B. HAROLD PEARSE Stokenham Barton, Kingsbridge, for *Jessie* 1st.

Class 138.—South Devon Heifers, calved in 1912. [6 entries, 3 absent.]

- 1130 I. (£10.)—B. BUTLAND, Leigham, Plympton, for *Handsome* 12th, born Jan 4; s. Henry 7th 3178, d. *Handsome* 3rd 6392 by Leigham Champion 1067.
 1134 II. (£6.)—BEN LUSCOMBE, Langton, Kingston, Kingsbridge, for *Countess Maid*, born March 31; s. Leigham Sort 3198, d. *Countess* 8010 by Masher 709.
 1133 III. (£4.)—H. HAWKEN & SON, Okenbury, Kingston, Kingsbridge, for *Dairymaid* 4th, born March 15; s. Doncaster 3730, d. *Dairymaid* 8481 by Elector 2351.

Class 139.—South Devon Bulls, calved in or before 1911.

[5 entries, 2 absent.]

- 1138 I. (£10, & Champion.)—BEN LUSCOMBE, Langton, Kingston, Kingsbridge, for *Leigham Sort* 3198, born March 12, 1908, bred by Butland Bros., Leigham, Plympton; s. Lo Ben 2167, d. by *Handsome* 4040.
 1136 II. (£6.)—DAVID CAMP & SONS, Widland, Modbury, for *Ley Marquis* 2041, born Feb. 7, 1907, bred by J. Wakeham, Dymford; s. Burrator 1819, d. *Dewdrop* 7471 by Jack Tar 1321.
 1140 R. N. & H. C.—W. & H. WHITLEY, Primley Farm, Paignton, for *Bismarck*.

Class 140.—South Devon Bulls, calved in 1912. [6 entries, 2 absent.]

- 1145 I. (£10.)—BEN LUSCOMBE, Langton, Kingston, Kingsbridge, for *Widland Masher*, born Jan. 2, bred by David Camp & Sons, Widland, Modbury; s. *Ley Marquis* 2041, d. *Sunbeam*; *Dairymaid* 2nd 6906 by *Widland Duke* 2019.
 1141 II. (£6.)—WILLIAM COCKER, Charleton Court, Kingsbridge, for *Star of the West*, born May 10; s. *Falconer* 3434, d. *Duchess* 5845 by *Best Man* 536.
 1144 R. N. & H. C.—BEN LUSCOMBE, for *Langton King*.

Class 141.—Milk Yield Prizes, open to South Devon Cows or Heifers entered in Class 136 only. [5 entries, 1 absent.]

- 1119 I. (£10.)—W. & H. WHITLEY, Primley Farm, Paignton, for *Primley Bloom* 8846, born May 29, 1908, calved April 12, 1913; s. *Manager* 2173, d. *Honesty* 2nd 5825 by *Forager* 1447.
 1120 II. (£6.)—W. & H. WHITLEY, for *Primley Blossom* 8847, born Sept. 1, 1908, calved April 2, 1913; s. *Manager* 2173, d. *Golden Cup* 3rd 7500 by *Saltram* 1230.
 1116 III. (£4.)—BEN LUSCOMBE, Langton, Kingston, Kingsbridge, for *Cherry* 3rd 8000, born March 18, 1904, calved May 10, 1913; s. *Masher* 709, d. *Cherry* 2nd 3180 by *New Year*; Gift 507.

Longhorns.³

Class 142.—Longhorn Cows or Heifers (in-milk), calved in or before 1910.

[8 entries, none absent.]

- 1154 I. (£10.)—W. HANSON SALE, Arden Hill, Atherstone, for *Bilstone Sunlight* (vol. 5, p. 18), brindle and white, born May 20, 1904, calved April 21, 1913, bred by (J. H. Tanner, Bilstone, Twycross, Atherstone; s. *Bilstone Monarch* 374, d. *Bilstone Moonshine* by *Winsome Lad* 397.
 1153 II. (£6.)—J. L. & A. RILEY, Putley, Ledbury, for *Putley Sapphire* (vol. 4, p. 23), red brindle and white, born Feb. 3, 1905, calved May 20, 1913, bred by John Riley, Putley Court, Ledbury; s. *His Honour* 386, d. *Peirce* by *Protender* 2nd 331.
 1152 III. (£4.)—LORD GERARD, Eastwell Park, Ashford, Kent, for *Envoy of Eastwell* (vol. 7, p. 18), brindle and white, born May 12, 1908, calved Jan. 21, 1913; s. *Melcombe Emperor* 418, d. *Bentley Dido* by *Bentley Wonder* 373.
 1150 R. N. & H. C.—LORD GERARD, for *Edelweiss of Eastwell*.

¹ Challenge Cup, given by a number of the R.A.S.E. interested in the breeding of South Devons, for the best Animal in Classes 136-140.

² £20 towards these Prizes were given by the Longhorn Cattle Society.

Award of Live Stock Prizes at Bristol, 1913. lxxxi

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 143.—*Longhorn Heifers, calved in 1911 or 1912.*

[10 entries, none absent.]

- 1161 I. (£10, & Champion.¹)—F. A. N. NEWDEGATE, M.P., Arbury Hall, Nuncaton, for Arbury Duchess (vol. 8, p. 38), red and white, born Oct. 30, 1911; s. Dersingham Prince 528, d. Arden Nori 2nd by Arden Conqueror 412.
 1166 II. (£8, & R.N. for Champion.¹)—LORD GERARD, Eastwell Park, Ashford, Kent, for Eileen 2nd of Eastwell (vol. 8, p. 26), plum brindle and white, born Sept. 21, 1911; s. Eastwell Elegant 531, d. Eileen of Eastwell by Arden Field Marshal 198.
 1153 III. (£4.) CAPT. C. W. COTFRELL-DORMER, Rousham, Steeple Aston, Oxon, for Rachel of Rousham (vol. 8, p. 21), brindle and white, born April 6, 1911; s. Hope Court 588, d. Melcombe Brindle 2nd by Pretender 2nd 331.
 1158 R. N. & H. C.—F. J. MAYO, Friar Waddon, Dorchester, for Lorna.

Class 144.—*Longhorn Bulls, calved in 1908, 1909, 1910, or 1911.*

[5 entries, none absent.]

- 1166 I. (£10, & Champion.²)—LORD GERARD, Eastwell Park, Ashford, Kent, for Eastwell Eagle 500, dark brindle and white, born Jan. 20, 1906; s. Imperial 506 d. Melcombe Lovely by Melcombe Conqueror 321.
 1167 II. (£8, & R. N. for Champion.²)—F. J. MAYO, Friar Waddon, Dorchester, for Lord Hewish 505, red and white, born March 22, 1911; s. Narley's Courtier 508, d. Lottie by Waddon Edward 128.
 1169 III. (£4.)—II. D. SPENCER, Moor Court, Kington, Herefordshire, for Rousham Rocket 510, dark brindle and white, born July 8, 1910 bred by Capt. C. W. Cotfrell-Dormer, Rousham, Steeple Aston; s. Putley Clay Lad 540, d. Arden Pansy 1th by Young Bow Horn 138.
 1168 R. N. & H. C.—F. A. N. NEWDEGATE, M.P., Arbury Hall, Nuncaton, for Arden Harry.

Class 145.—*Longhorn Bulls, calved in 1912.* [6 entries, none absent.]

- 1175 I. (£10.)—LORD SOUTHAMPTON, Idhote, Shipston-on-Stour, for Bridegroom, brindle and white, born Jan. 15; s. Stowe Brindle Duke 823, d. Pride 2nd (vol. 5, p. 20) by President 390.
 1174 II. (£6.)—W. HANSON SALE, Arden Hill, Atherstone, for Arden Rajah, red and white, born May 1; s. Arden Rover 571, d. Arden Grey Queen (vol. 6, p. 10) by Narley's Pretender 420.
 1173 III. (£4.) J. L. & A. RILEY, Putley, Ledbury, for Poles Ozar, brindle and white, born March 18, bred by E. S. Hanbury, Poles, Ware, Herts; s. Eastwell Emblem 2nd 501, d. Poles Queen (vol. 7, p. 17), by Poles Monarch 470.
 1171 R. N. & H. C.—F. J. MAYO, Friar Waddon, Dorchester, for Waddon King.

Class 146.—*Milk Yield Prizes, open to Longhorn Cows and Heifers entered in Class 142 only.* [5 entries, none absent.]

- 1151 I. (£10.)—LORD GERARD, Eastwell Park, Ashford, Kent, for Eleanor of Eastwell (vol. 6, p. 16), dark brindle and white, born May 4, 1906, calved Jan. 25, 1913; s. Westminster Square 435, d. Woodcote Empress 2nd by Kentworth 317.
 1153 II. (£6.) J. L. & A. RILEY, for Putley Sapphire. (See Class 143)

Sussex.

Class 147.—*Sussex Cows or Heifers (in-milk), calved in or before 1910.*

[No entry.]

Class 148.—*Sussex Heifers, calved in 1911.* [5 entries, 2 absent.]

- 1180 I. (£10, & Champion.³)—W. A. THORNTON, Lock, Partridge Green, Sussex, for Lock Headless 3rd 13639, born Jan. 18; s. Ben of Lock 2279, d. Penshurst Headless 8549 by Young Benares 1703.
 1179 II. (£8.)—TIEB. HON. RALPH PELHAM NEVILL, Birling Manor, Maidstone, for Birling Careful 3rd 13808, born Jan. 21; s. Mayfield Guy 2464, d. Birling Careful 11504 by Paley Major 2059.
 1177 III. (£4.)—ERNEST M. BRABY, Drungewick Manor House, Rudgwick, Sussex, for Lady Eileen 14089, born Jan. 26, bred by O. Garrard, Hawkhurst Court, Billingshurst; s. K.C. 2523, d. Blunder 4th 10423 by President 1914.

¹ Silver Challenge Cup given through the Longhorn Cattle Society for the best Heifer or Bull in Classes 143 and 145.

² Perpetual Challenge Cup given by the Longhorn Cattle Society for the best Cow or Bull in Classes 143 and 141.

³ Champion Silver Medal given by the Sussex Herd Book Society for the best Cow or Heifer in Classes 147-149.

lxxxii *Award of Live Stock Prizes at Bristol, 1913.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 149.—*Sussex Heifers, calved in 1912.* [7 entries, 1 absent.]

- 1187 I. (£10, & R. N. for Champion.¹)—W. A. THORNTON, Lock, Partridge Green, Sussex, for Lock Darkey 5th 14527, born Jan. 2; s. Northchapel Premier 2615, d. Darkey 8th of Lock 12190 *by* Tutsham Toreador 2018.
 1185 II. (£6.)—WALTER GEORGE FLADGATE, Apsley, Thakeham, Pulborough, for Apsley Norah 3rd 14303, born Jan. 20; s. Shillinglee Bewbush 6th 2100, d. Theald Norah 9209 *by* Gladstone Prince 3rd 1771.
 1183 III. (£4.)—ERNEST E. BRADY, Drungewick Manor House, Rudgwick, Sussex, for Drungewick Speculation 2nd 14083, born Jan. 1; s. K.C. 2523, d. Loxwood Speculation 12218 *by* Shillinglee Bewbush 6th 2400.
 1184 E. N. & H. C.—WALTER GEORGE FLADGATE, for Apsley Cranberry 2nd.

Class 150.—*Sussex Bulls, calved in 1908, 1909, or 1910.* [2 entries.]

- 1189 I. (£10, & Champion.²)—WALTER GEORGE FLADGATE, Apsley, Thakeham, Pulborough, for Apsley Albert 2nd 2706, born June 21, 1910; s. Albert 2nd 2032, d. Apsley Daisy 9334 *by* Rochester Twin 1923.
 1188 II. (£6.)—JOHN AUNGIER, Lynwick, Rudgwick, for Lynwick Autocrat 2630, born March 28, 1910; s. Masterpiece 2330, d. Paley Beauty 9267 *by* Autocrat 2020.

Class 151.—*Sussex Bulls, calved in 1911.*³ [2 entries.]

- 1180 I. (£10, & R. N. for Champion.²)—W. T. FREMLIN, Milgate Park, Maidstone, for Tutsham Nero 2911, born Jan. 3, bred by Gerald Ward, Tutsham, West Farleigh, Maidstone; s. Shillinglee Bewbush 5th 2394, d. Lady Norah 5th 11592 *by* Tutsham Toreador 2018.
 1191 II. (£6.)—JAMES GROVES, Brownings Manor, Blackboys, Sussex, for Lock Miller 2nd 2994, born March 1, bred by W. A. Thornton, Lock, Partridge Green; s. Tutsham Toreador 2018, d. Millmaid of Lock 10510 *by* Prince of Drungewick 3rd 1810.

Class 152.—*Sussex Bulls, calved in 1912.* [5 entries, none absent.]

- 1193 I. (£10.)—WALTER GEORGE FLADGATE, Apsley, Thakeham, Pulborough, for Apsley Bewbush 4th 3081, born Feb. 29; s. Shillinglee Bewbush 6th 2100, d. Fairy 8818 *by* Drungewick Prebble 2nd 1877.
 1195 II. (£8.)—THE HON. RALPH PELHAM NEVILL, Birling Manor, Maidstone, for Birling Geoffrey 3181, born Feb. 4; s. Birling Cecil 2780, d. Maresfield Florence 2nd 10390 *by* Buchanan Alfred 1915.
 1194 III. (£4.)—JAMES GROVES, Brownings Manor, Blackboys, Sussex, for Ticehurst Goldsmith 2nd 3091, born Feb. 17, bred by William Ford, Singehurst, Ticehurst; s. Lavington Gold 8th 2532, d. Oakover Bonnie 12017 *by* Quedley Bullfinch 2nd 2080.
 1196 E. N. & H. C.—W. A. THORNTON, Lock, Partridge Green, Sussex, for Lock Toreador.

Welsh.⁴

Class 153.—*Welsh Cows or Heifers (in-milk), calved before December 1, 1910.*

[5 entries, 1 absent.]

- 1201 I. (£10.)—THE HON. F. G. WYNN, Glynllivon Park, Carnarvon, for Lady Newydd 3rd 1217, born Dec. 7, 1905, calved March 8, 1913; s. The Shah 201, d. Lady Newydd 084 *by* Rhaiadr Du 3rd 455.
 1199 II. (£8.)—R. M. GREAVES, Wern, Portmadoc, for Wern Ideal 1280, born Feb. 12, 1909, calved Oct. 14, 1912; s. Duke of Wellington 291, d. Wern Bilberry 185 *by* Wern Cawr 42.
 1198 III. (£4.)—THE MARQUIS OF BUTE, Cardiff Castle, Cardiff, for Queen, born Sept. 6, 1910, calved Jan. 13, 1913, bred by W. H. Evans, Trenewyddlawn, Oresgoch, Lutterston; s. Confidence 31, d. Madam.
 1200 E. N. & H. C.—LORD ST. DAVIDS, Lydstep Haven, Lydstep, Penally, for Lydstep Sarah.

Class 154.—*Welsh Heifers, calved on or after December 1, 1910, and before December 1, 1911.* [5 entries, none absent.]

- 1206 I. (£10.)—THE HON. F. G. WYNN, Glynllivon Park, Carnarvon, for Glyn Glôd, born Mar. 1, 1911; s. Glyn Constable 414, d. Glyn Bloden 685 *by* Rhaiadr Du 3rd 455.
 1204 II. (£6.)—DAVID JENKINS, Cerrigtrannau, Talybont, for Barbara, born Aug. 8, 1911; s. Billy Bach 2nd 463, d. Caran Ddu 297.
 1203 III. (£4.)—LORD HARLEIGH, Glyn, Talarnau, for Glyn Cynfil 2nd 1313, born Dec. 21, 1910; s. Merion 286, d. Glyn Cynfil 1015 *by* Penally Tip Top 107.
 1202 E. N. & H. C.—R. M. GREAVES, Wern, Portmadoc, for Penllyn Bechan.

¹ Champion Silver Medal given by the Sussex Herd Book Society for the best Cow or Heifer in Classes 147-149.

² Champion Silver Medal given by the Sussex Herd Book Society for the best Bull in Classes 150-152.

³ Prizes given by the Sussex Herd Book Society.

⁴ £30 towards these Prizes were given by the Welsh Black Cattle Society.

Award of Live Stock Prizes at Bristol, 1913. lxxxiii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 155.—*Welsh Heifers, calved on or after December 1, 1911, and before December 1, 1912.* [7 entries, none absent.]

- 1211 I. (£10.)—DAVID JENKINS, Cerrigtrannau, Talybont, for Betsy, born Dec. 24, 1911; s. Billy Bach 2nd 488, d. Jim Jones 2nd 1342 by Billy Bach 240.
 1209 II. (£6.)—R. M. GREAVES, Wern, Portmadoc, for Wern Lucy, born Jan. 5, 1912; s. Wern Inky 338, d. Modder 401 by Mafeking 480.
 1208 III. (£4.)—R. M. GREAVES, for Wern Locket, born Feb. 25, 1912; s. Wern Joker 444, d. Wern Gossip 996 by Wern Emperor 50.
 1210 R. N. & H. C.—EDWARD GRIFFITH, Cerrig Barcud, Brynisiencyn, Anglesau, for Megan o'r Bryn.

Class 156.—*Welsh Bulls, calved on or after December 1, 1907, and before December 1, 1910.* [4 entries.]

- 1215 I. (£10.)—R. M. GREAVES, Wern, Portmadoc, for Wern Inky 338, born Mar. 20, 1909; s. Duke of Wellington 284, d. Moltano 305 by Mafeking 480.
 1217 II. (£8.)—O. H. LLOYD-EDWARDS, Nanhoron, Fwlliheli, for Robin Ddu 518, born Oct. 28, 1909, bred by W. Thomas, Hirdrefaing, Llangefni; s. Tango 273, d. Ruth 1179 by Padrig 133.
 1216 III. (£4.)—LORD HARLEIGH, Glyn, Talsarnau, for Glyn Infidel 458, born Sept. 29, 1910; s. Marion 386, d. Isabella 4th 1020 by Tybor 211.
 1214 R. N. & H. C.—THE MARQUIS OF BUTE, Cardiff Castle, for Hendre Champion.

Class 157.—*Welsh Bulls, calved on or after December 1, 1910, and before December 1, 1911.* [4 entries.]

- 1219 I. (£10.)—R. M. GREAVES, Wern, Portmadoc, for Wern Knight, born March 5, 1911; s. Wern Inky 338, d. Wern Bachsheech 182 by Wern Cawr 42.
 1220 II. (£6.)—EDWARD GRIFFITH, Cerrig Barcud, Brynisiencyn, Anglesau, for Billy Bach 4th, born Jan. 4, 1911, bred by David Jenkins, Cerrigtrannau, Talybont; s. Billy Bach 2nd 408, d. Jim Jones 206.
 1221 III. (£4.)—DAVID JENKINS, Cerrigtrannau, Talybont, for Twm Nancy, born Aug. 9, 1911; s. Billy Bach 2nd 408, d. Shany Abermude 295.
 1218 R. N. & H. C.—THE MARQUIS OF BUTE, Cardiff Castle, Cardiff, for Stanley.

Class 158.—*Welsh Bulls, calved on or after December 1, 1911, and before December 1, 1912.* [8 entries, 1 absent.]

- 1223 I. (£10.)—H. O. ELLIS, Tynhendre, Bangor, for bull, born December 17, 1911; s. Duke of Bodwyry 875, d. Hendre 717 by Gemmaes Hendre 18.
 1227 II. (£6.)—O. H. LLOYD-EDWARDS, Nanhoron, Fwlliheli, for Nanhoron President, born Jan. 4, 1912; s. Robin Ddu 518, d. Nanhoron Necklace 1374 by Nanhoron Numble 260.
 1224 III. (£4.)—R. M. GREAVES, Wern, Portmadoc, for Penllyn Cawr, born Dec. 13, 1911, bred by William Roberts, Penystumlyn, Oricmoth; s. Penllyn Calfow 388, d. Penllyn Nell 1463 by Ty Top 158.
 1225 R. N. & H. C.—J. W. HARRIES, Pirhoth, Llanstephan Road, Carmarthen, for Prince George.

Red Polls.¹

Class 159.—*Red Poll Cows or Heifers (in-milk), calved in or before 1910.* [13 entries, 8 absent.]

- 1212 I. (£10, & Champion.)²—GEORGE HOLT WILSON, Redgrave, Diss, Norfolk, for Charming Davy 12th 23038, born Jan. 18, 1909, calved May 4, 1913; s. Starston Emperor 9335, d. Charming Davy 3rd 14646 by Jabez Balfour 4448.
 1230 II. (£6.)—THE MARCHIONESS OF GRAHAM, Easton Park, Wickham Market, for Ashlyns Fawn 21909, born May 15, 1909, calved Jan. 10, 1913, bred by the late Sir Richard Cooper, Bt., Ashlyns, Borkhamsted; s. Ashlyns Major 9123, d. Ashlyns Fhrt 19012 by Ashlyns Frinton 7804.
 1236 III. (£4.)—SIR EUSTACE CURNEY, Sprowston Hall, Norwich, for Brissels 22470, born Feb. 6, 1910, calved May 20, 1913; s. Sardannpalus 9863, d. Bridge 20230 by Recruit 8994.
 1234 R. N. & H. C.—LORD CRANWORTH, Letton, Shipdham, for Meadow Ruby.

Class 160.—*Red Poll Heifers, calved in 1911.* [7 entries, 1 absent.]

- 1243 I. (£10, & R. N. for Champion.)²—THOMAS BROWN & SON, Marham Hall, Downham Market, for Acton Waxwing 23891, born April 21, bred by the Trustees of the late Sir Walter Corbet, Bt., Acton Reynold, Shrewsbury; s. Acton Saracen 9833, d. Waxlight 2nd 18963 by Royal Standard 8707.

¹ £20 towards these Prizes were given by the Red Poll Cattle Society.

² Champion Prize of £5 given by the Red Poll Cattle Society for the best Cow or Heifer in Classes 159-161.

lxxxiv *Award of Live Stock Prices at Bristol, 1913.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 1215 II. (£6.)—GERALD DUDLEY SMITH, Strensham Court Worcester, for *Acton Poppy-head* 22690, born July 23, bred by the Trustees of the late Sir Walter Corbett, Bt., Acton Reynold, Shropshire; s. Acton Comet 9879, d. Acton Poppy 21961 by Acton Merlin 9637.
- 1214 III. (£4.)—KENNETH M. CLARK, Sudbourne Hall Orford Suffolk for *Sudbourne Marjorie* 23320, born April 27 s. Antrim 9769, d. Sudbourne Mabel 21207 by Sudbourne Rowdy 9500
- 1240 R. N. & H. C.—GEORGE HOLT WILSON, Redgrave, Diss, for *Redgrave Sunshade* 8th. Class 161.—*Red Poll Heifers, calved in 1912.* [13 entries, 2 absent.]
- 1257 I. (£10.)—THE MARCHIONESS OF GRAHAM, Easton Park, Wickham Market, for *Vanity Fair* 2312, born Jan. 5; s. Letton Vanity Davyson 4th 10071, d. Ashlyn Fawn 21000 by Ashlyn Major 9192
- 1251 II. (£6.)—KENNETH M. CLARK, Sudbourne Hall, Orford Suffolk, for *Sudbourne Berry* 1st 23790, born Feb. 17 s. Acton Crowfoot 9987, d. Sudbourne Bertha 21451 by Rendlesham Lad 9029
- 1256 III. (£4.)—THE RT. HON. SIR AILWYN E. FELLOWES, K.C.V.O., Honingham Hall, Norwich, for *Honingham Amberley* 2nd 23565, born Jan. 9; s. Honingham Alcester 10424, d. Honingham Amberley 23142 by Acton Rocket 9761
- 1255 R. N. & H. C.—THE RT. HON. SIR AILWYN E. FELLOWES, K.C.V.O., for *Honingham Alba* 7th.

Class 162.—*Red Poll Bulls, calved in 1908, 1909, 1910 or 1911.*

[9 entries, 1 absent.]

- 1268 I. (£10, & Champion.)—THE RT. HON. SIR AILWYN E. FELLOWES, K.C.V.O., Honingham Hall, Norwich, for *Honingham Alcester* 10424, born May 5 1909; s. Jacobite 9706, d. Silk 17067 by Red Rover 5149.
- 1264 II. (£6, & R. N. for Champion.)—THOMAS BROWN & SON, Marham Hall, Downham Market, for *Marham Alert* 10335, born Feb. 1, 1911; s. Patriot 9600, d. Honingham Alba 18665 by Arthur 7802
- 1267 III. (£4.)—LORD ORANWORTH, Letton, Shipdham, Norfolk, for *Letton Vanity Davyson* 5th 10052, born April 16, 1909; s. Letton Vanity Davyson 9810, d. Omega 2nd 10657 by Marquis Blush 9128.
- 1265 R. N. & H. C.—CAPTAIN D. G. ATLEY, Plumstead Hall, Norwich, for *Battleaxe*.
- Class 163.—*Red Poll Bulls, calved in 1912.* [9 entries, none absent.]
- 1274 I. (£10.)—THOMAS BROWN & SON, Marham Hall, Downham Market, for *Marham Alloy* 10452, born Feb. 21; s. Patriot 9800, d. Honingham Alba, 18665 by Arthur 7802.
- 1275 II. (£6.)—THE RT. HON. SIR AILWYN E. FELLOWES, K.C.V.O., Honingham Hall, Norwich, for *Honingham Ammerdown* 2nd 10426, born March 6; s. Honingham Andover 10434, d. Aident 14400 by The Pope 4781.
- 1272 III. (£4.)—CAPT. D. G. ATLEY, Plumstead Hall, Norwich, for *Plumstead Pride*, born March 5; s. Letton Vanity Davyson 4th 10051, d. Ashlyn Folly 10331 by Mathele 4322.

- 1280 R. N. & H. C.—GEORGE HOLT WILSON, Redgrave, Diss, for *Redgrave Rufus*.

Class 164.—*Milk Yield Prizes, open to Red Poll Cows and Heifers entered in Class 159 only.* [8 entries, 2 absent.]

- 1287 I. (£10.)—THE MARCHIONESS OF GRAHAM, Easton Park, Wickham Market, for *Frimrose* 20198 born April 3, 1905, calved May 5, 1913, bred by R. C. Ford for The Upper Hall Leathers; s. Marjorie 9127, d. Meadow Sweet 13985 by Redmond 6147.
- 1233 II. (£6.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for *Sudbourne Sadie* 1st 20081, born April 19, 1906, calved May 8, 1913, bred by H. G. Walne, Kettleburgh, Suffolk; s. Standard Bearer 9331, d. Kettleburgh Ruby 6th 13001 by Newbourn 5061
- 1282 III. (£4.)—KENNETH M. CLARK, for *Sudbourne Queen* 1st 20122, born Sept. 3, 1901, calved April 24, 1913; s. Sudbourne Russell 9500, d. Sudbourne Queen 18301 by Motor 6455.
- 1281 R. N. & H. C.—LORD ORANWORTH, for *Meadow Ruby*.

Aberdeen Angus.*

Class 165.—*Aberdeen Angus Cows or Heifers (in-milk), calved before December 1, 1910.* [7 entries, none absent.]

- 1288 I. (£10, & Champion.)—G. D. FABER, C.B., M.P., Rush Court, Wallingford, for *Itala* 44028, born Jan. 4, 1908, calved Jan. 23, 1913, bred by James Kennedy, Doonholm, Ayr; s. Mythologist 24030, d. Idiom 24052 by Mailbag 13637.

* Champion Prize of £5 given by the Red Poll Cattle Society for the best Bull in Classes 162 and 163

† £20 towards these Prizes were given by the Aberdeen Angus Cattle Society.

‡ Gold Medal given by the English Aberdeen Angus Cattle Association for the best animal of the opposite sex to that of the animal awarded the Gold Medal of the Aberdeen Angus Cattle Society in Classes 165-170.

Award of Live Stock Prizes at Bristol, 1913. lxxxv

[Unless otherwise stated, each prize animal named below was "bred by exhibitor"]

- 1287 II. (£6.)—WALTER A SANDERMAN, Morden House, Royston for Isoline 36272, born Jan 7, 1903, calved Dec 18 1912, bred by C W. Schroeter, Tedfold, Billinghurst; s. Matlag 13687, d. Iphigenia of Tedfold 29109 by diagram of Contachy 8292.
1282 III. (£4.)—JOHN JOSEPH CRIDLAN, Malsmore Park, Gloucester, for Estarel of West Wycombe 11915, born May 15, 1907, calved May 20, 1913, bred by Sir Robert J. Dashwood, Bt., West Wycombe, Bucks.; s. Prince Foremost 23724, d. Estarel of Langshott 36903 by Breckan 15335

Class 166.—*Aberdeen Angus Heifers, calved on or after December 1, 1910, and before December 1, 1911.* [1 entries, 1 absent.]

- 1290 I. (£10.)—JOHN M. G. PERRIE, Glenlogie, Forbes, Alford, Aberdeenshire, for Pride of Don 2nd 19114, born Jan 11 1911; s. Metaphor 27161, d. Pride of Peebles 38705 by Elshender 16523
1291 II. (£6.)—THE DUKE OF RICHMOND AND GORDON, K.G., Goodwood, Chichester, for Matilda 3rd of Goodwood 49668, born Dec. 5, 1910; s. Ventnor of Hurley 2811, d. Mabel 6th of Craighall 37762 by Juba of Ballindalloch 16719.
1288 III. (£4.)—H. L. C. BRASSEY, M.P., Ashthorpe Hall, Wancford, for Eager of Careston 48240, born March 24, 1911, bred by W. Shaw Adamson, Careston Castle, Brechin; s. Petronius 29751, d. Egeria of Careston 36706 by Price List 17009.

Class 167.—*Aberdeen Angus Heifers, calved on or after December 1, 1911, and before December 1, 1912.* [17 entries, 8 absent.]

- 1302 I. (£10, & R. N. for Champion.)—JOHN JOSEPH CRIDLAN, Malsmore Park, Gloucester, for Estelle of Malsmore 50414, born April 6, 1912; s. Everwise 24436, d. Estrel of West Wycombe 41915 by Prince Foremost 23724.
1308 II. (£6.)—WALTER A. SANDERMAN, Morden House, Royston, for Queen of Morden 51404, born Dec. 31, 1911; s. Edragal 27898, d. Queen Mother 2nd of West Wycombe 37124 by Jansen of Hillhead 18454.
1293 III. (£4.)—VISCOUNT ALLENDALE, Bywell Hall, Stockfield-on-Tyne, for Vellozia of Bywell, born April 20, 1912; s. Juan Eric 30733, d. Vellozia of Glamis 36440 by Fairy King of Kirkbridge 11093.
1306 IV. (£8.)—CHARLES L. PRIOR, Dugman Priory, Romford, for Persepha 31083, born Jan 13, 1912, bred by D. M. MacRae, Stenhouse, Thornhill; s. Evi claus of Ballindalloch 24436, d. Persephone of Ballindalloch 31947 by Bion 11454.

Class 168.—*Aberdeen Angus Bulls, calved on or after December 1, 1907, and before December 1, 1910.* [6 entries, 2 absent.]

- 1300 I. (£10, & Champion.)—VISCOUNT ALLENDALE, Bywell Hall, Stockfield-on-Tyne, for Elmhore 29122, born March 31, 1909, bred by His Majesty King Edward VII., Aberfeldie Mans., Ballaister; s. Glenmar of Ballindalloch 24330, d. Elme of Aberfeldie 23729 by Rutenberg 10825.
1311 II. (£6.)—LORD PENRHYN, Wicken Park, Stony Stratford, for Elmoston 29124, born April 21, 1909, bred by Patrick Chalmers, Aldbar Castle, Brechin; s. Beaver 2nd of Ardross 26569, d. Fashion of Pitpointie 26387 by Enthusiasm of Ballindalloch 6268.
1312 III. (£4.)—G. D. FAHER, C.B., M.P., Rush Court, Wallingford, for Eligible of Ballindalloch 29108, born March 24, 1909, bred by Sir John Macpherson Grant, Bt., Ballindalloch Castle, Ballindalloch; s. Jeshurun 19257, d. Elquon 35602 by Delamere 13395.

Class 169.—*Aberdeen Angus Bulls, calved on or after December 1, 1910, and before December 1, 1911.* [6 entries, 1 absent.]

- 1319 I. (£10, & R. N. for Champion.)—JOHN JOSEPH CRIDLAN, Malsmore Park, Gloucester, for Everard 2nd of Malsmore 31888, born April 8, 1911; s. Rubelate of Malsmore 28700, d. Evi raven 13th 38730 by Wizard of Malsmore 21467.
1317 II. (£6.)—SIR GEORGE A. COOPER, Bt., Hurley Park, Winchester, for Evolsurus of Hurley 32507, born Feb. 25, 1911, s. Evolsurus 31908, d. Rose of Western 40230 by Extractor 17823.
1320 III. (£4.)—JOHN M. G. PERRIE, Glenlogie, Forbes, Alford, Aberdeenshire, for Bewitcher 31474, born March 13, 1911; s. Metaphor 27161, d. Westerina of Standen 31613 by Rosy King of Tedfold 14937.

Class 170.—*Aberdeen Angus Bulls, calved on or after December 1, 1911, and before December 1, 1912.* [10 entries, 2 absent.]

- 1323 I. (£10.)—JOHN STEWART CLARK, Dundas Castle, South Queensferry, for Expert 2nd of Dundas 33196, born April 25, 1912; s. Elmarello 29121, d. Elra of Dundas 45084, by Kblamere 21781.

¹ Gold Medal given by the English Aberdeen Angus Cattle Association for the best animal of the opposite sex to that of the animal awarded the Gold Medal of the Aberdeen Angus Cattle Society in Classes 165-170.

² Gold Medal given by the Aberdeen Angus Cattle Society for the best Animal in Classes 165-170.

lxxxvi *Award of Live Stock Prizes at Bristol, 1913.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

1324 II. (£6.)—JOHN JOSEPH CRIDLAN, Maisemore Park, Gloucester, for Idart of Maisemore 33315, born Feb. 9, 1912; s. Everwise 24438, d. Tulip of Standen 46122 by Flector of Benton 21814.

1326 III. (£4.)—CAPT. J. H. GREER, Curragh Grange, The Curragh, co. Kildare, for Legion of Curragh 33437, born Dec. 11, 1911; s. Ermelo 29314, d. Legend R. 2nd 39043 by Prince Forest 21106.

Galloways.¹

Class 171.—*Galloway Cows or Heifers (in-milk), calved before December 1, 1910.* [4 entries, 1 absent.]

1331 I. (£10.)—ARTHUR H. FOX-BROOKBANK, The Croft, Kirksanton, Cumberland, for Mona 22188, born in Feb., 1908, calved Dec. 10, 1912, bred by Hugh Fraser, Arkland, Dalbeattie; s. Lord of the Isles 9940, d. Lady Grace 8th 18191 by Macdougall 3rd of Arkland 9229.

1334 II. (£6.)—ROBERT T. SCOTT, Drumhughry, Corsock, Dalbeattie, for Cowslip 26th of Drumhughry 19587, born Jan. 8, 1907, calved May 1, 1913; s. Othello of Kilquhanity 8469, d. Cowslip 5th of Drumhughry 13972 by Scottish Hero 5300.

1333 III. (£4.)—THOMAS HOPE-BELL, Morrinton, Dumfries, for Dora of Morrinton 23185, born May 28, 1909, calved Feb. 16, 1913, bred by C. R. Dudgeon, Cargen Holm, Dumfries; s. Chancellor 9010, d. Dora of Durhamhill 13550 by Camp Follower 5042.

Class 172.—*Galloway Heifers, calved on or after December 1, 1910, and before December 1, 1911.* [5 entries, none absent.]

1335 I. (£10.)—THOMAS BIGGAR & SONS, Chapelton, Dalbeattie, for Maggie 10th of Chapelton 22316, born Dec. 20, 1910; s. Macdougall 3rd of Arkland 9229, d. Maggie 4th of Chapelton 18792 by Excelsior 7702.

1338 II. (£6.)—ROBERT GRAHAM, Auchengassel, Twynholm, N.B. for Nora of Auchengassel 22596, born April 1, 1911, bred by B. H. Lane, Rush Hall, Limavady; s. Olix 10020, d. Our Sally 18674 by Brucina 3rd of Drumlanrig 8045.

1339 III. (£4.)—THOMAS HOPE-BELL, Morrinton, Dumfries, for Lady Anne 2nd 22511, born March 12, 1911, bred by Hugh Fraser, Arkland, Dalbeattie; s. Macdougall 3rd of Arkland 9229, d. Lady Anne of Arkland 18537 by Wooler 6th 8058.

1337 R. N. & H. C.—ROBERT GRAHAM, for Nector of Auchengassel.

Class 173.—*Galloway Heifers, calved on or after December 1, 1911, and before December 1, 1912.* [6 entries, 1 absent.]

1340 I. (£10.)—THOMAS BIGGAR & SONS, Chapelton, Dalbeattie, for Lizzie 7th of Chapelton 22782, born March 18, 1912; s. Sweepstakes 10001, d. Lizzie 2nd of Chapelton 19464 by Lord William 7108.

1343 II. (£6.)—ARTHUR H. FOX-BROOKBANK, The Croft, Kirksanton, Cumberland, for Mary of Blackcombe 22888, born Dec. 17, 1911; s. Macdougall 3rd of Arkland 9229, d. Lady Primrose of Castlemilk 16360 by The Pathfinder 3rd 5091.

1341 III. (£4.)—THOMAS BIGGAR & SONS, for Lizzie 8th of Chapelton 22781, born Feb. 7, 1912; s. Sweepstakes 10001, d. Lizzie of Chapelton 17418 by Professor of Tarbrooch 7097.

1342 R. N. & H. C.—ARTHUR H. FOX-BROOKBANK, for Clara of Blackcombe.

Class 174.—*Galloway Bulls, calved on or after December 1, 1907, and before December 1, 1911.* [4 entries.]

1348 I. (£10.)—ROBERT GRAHAM, Auchengassel, Twynholm, for Black Prince 11622, born Feb. 10, 1908, bred by Henry C. Stephens, Cholderton, Salisbury; s. Scottish Chief 2nd of Castlemilk 7683, d. Baroness 8th of Quarley 17774 by Rascal 6118.

1346 II. (£6.)—THOMAS BIGGAR & SONS, Chapelton, Dalbeattie, for Ossar 10607, born July 6, 1908, bred by Robert J. Calwell, Ballyhole, Ballynure; s. Crown Jewel 2nd 9477, d. Maggie 11th of Tarbrooch 13480 by Campfollower 5042.

1347 III. (£4.)—ARTHUR H. FOX-BROOKBANK, The Croft, Kirksanton, Cumberland, for Gordon of Blackcombe 10775, born Feb. 25, 1909; s. Crusoe 3rd of Stepford 9700, d. Dainty of Three Crofts 18174 by Campfollower of Stepford 7476.

1349 R. N. & H. C.—ROBERT GRAHAM, for Wanderer.

Class 175.—*Galloway Bulls, calved on or after December 1, 1911, and before December 1, 1912.* [5 entries, 2 absent.]

1351 I. (£10.)—ARTHUR H. FOX-BROOKBANK, The Croft, Kirksanton, Cumberland, for Banker of Barscobe 11842, born March 28, 1912, bred by George Robb, Barscobe, New Galloway; s. Jenkins 10852, d. Beatrice 3rd of Barscobe 22800 by Success 9206.

1353 II. (£6.)—ROBERT GRAHAM, Auchengassel, Twynholm, for Jack of Blackcombe 11708, born Dec. 28, 1911, bred by A. H. Fox-Brookbank, The Croft, Kirksanton, Cumberland; s. Macdougall 3rd of Arkland 9229, d. Santove of Orainerton 21450 by Keystone 9689.

1350 III. (£4.)—THOMAS BIGGAR & SONS, Chapelton, Dalbeattie, for Bannerman of Auchenhay 11887, born Feb. 9, 1912, bred by James Clark, Auchenhay, Corsock; s. Carisbrooke 2nd 9757, d. Clara 2nd of Auchenhay 17958 by Scamp 2nd 8195.

¹ £20 towards these Prizes were given by the Galloway Cattle Society.

Award of Live Stock Prizes at Bristol, 1913. lxxxvii

[Unless otherwise stated each prize animal named below was "bred by exhibitor."]

Highland.

Class 176.—*Highland Cows or Heifers (in-milk).*

[No entry.]

Class 177.—*Highland Bulls, calved in or before 1912.*

[3 entries, 1 absent.]

- 1356 I. (£10.)—ROBERT GRAHAM, Auchengasael, Twynholm, for Donald, brindle, born Jan. 30, 1912, bred by Kenneth McDonald, Logan, Stranraer; s. Sirius 2342, d. Froiseag 10th of Brendalbano 6651 by Adholach 2nd 1187.

Ayrshires.¹

Class 178a.—*Ayrshire Cows or Heifers (in-milk).*

[11 entries, none absent.]

- 1359 I. (£10.)—ALEXANDER CROSS, Knockdon Farm, Maybole, for Knockdon Lady Constance 26424, white and brown, born Jan. 14, 1910, calved June 24, 1913; s. Muir Royal Review 7387, d. Caroline 8rd of Knockdon 11153 by Prince of Knockdon 2683.
1361 II. (£8.)—W. & J. KERR, Old Graitney, Gretna, Carlisle, for Old Graitney Juanita 2nd 26826, red and white, born in March, 1908, calved May 23, 1913, bred by A. & W. Kerr; s. Knockdon Admiral 5737, d. Old Graitney Juanita 18879 by Sir John of Old Graitney 4035.
1368 III. (£4.)—ROBERT WILSON, Manswrae, Bridge of Weir, for Manswrae Primrose 4th 22871, brown and white, born May 20, 1907, calved May 18, 1913; s. Manswrae Drennan 7068, d. Manswrae Primrose 16680 by Kruger of Manswrae 4373.
1305 R. N. & H. C.—W. & J. KERR, for Old Graitney Yellow Bess.

Class 178b.—*Ayrshire Cows or Heifers (in-calf).*

- 1367 I. (£10.)—ROBERT WILSON, Manswrae, Bridge of Weir, for Manswrae Miss Moffat 27900, white and brown, born May 10, 1904, bred by James Moffat, Gateside, Sanquhar; s. St. Malcolm of Manswrae 4641, d. Kate 5th of Gateside 12251 by Lord Linnburn of Kirkebride 3701.
1366 II. (£6.)—W. & J. KERR, Old Graitney, Gretna, Carlisle, for Old Graitney Soncie 16th 20887, red and white, born in June, 1909; s. Old Graitney Lord John 7480, d. Old Graitney Soncie 8th 19545 by Sir John of Old Graitney 4035.
1360 III. (£4.)—LIEUT.-COL. G. J. FERGUSSON-BUCHANAN, Auchentorlie, Bowling, for Ardyne Brown Bess 3rd 26152, brown, born in April, 1907, bred by John McAlister, Ardyne, Toward; s. West Newton General 6104, d. Rucheady A. of Mid Ascog 12298 by Prince of Avondale 8247.
1358 R. N. & H. C.—ALEXANDER CROSS, Knockdon Farm, Maybole, for Knockdon Bloomer 2nd.

Class 179.—*Ayrshire Bulls, calved in or before 1912.* [3 entries, 1 absent.]

- 1371 I. (£10.)—JAMES HOWIE, Hillhouse, Kilmarnock, for white, born March 31, 1912, bred by Robert Woodburn, Whitehill, Hurlford; s. Whitehill Envy Me 7027, d. Whitehill White 2nd 18435 by Traveller Again of Holehouse 4561.
1369 II. (£8.)—JAMES HOWIE, for Howie's Olmax 9024, white, born April 20, 1910, bred by Robert Osborne, Morton Main, Thornhill; s. Auchentorlie Pluto 7541, d. Morton Main Polly 18304 by Gigantic Stunner of Wynchalm 3872.

Class 180.—*Milk Yield Prizes, open to Ayrshire Cows and Heifers entered in Class 178a only.* [4 entries, none absent.]

- 1361 I. (£10.)—LIEUT.-COL. G. J. FERGUSSON-BUCHANAN, Auchentorlie, Bowling, for Auchentorlie Bella 18871, brown and white, born April 17, 1905, calved March 22, 1913; s. Auchentorlie Rum Ration 4806, d. Auchentorlie Speckle 17820 by Sir John of Old Graitney 4035.

British Holsteins.²

Class 181.—*British Holstein Cows (in-milk), calved in or before 1909.*

[11 entries, 3 absent.]

- 1373 I. (£10.)—JOHN BROMET, Golf Links Farm, Tadcaster, for Stanfield Phoebe 3822, black and white, born in August, 1908, calved May 25, 1913, bred by Mrs. Case, Manor House, Stanfield, East Dereham; s. Elmham, d. Mother Phoebe.

¹ £20 towards these Prizes were given by the Ayrshire Cattle Herd Book Society.

² £30 towards these Prizes and Silver Medals for the First Prize winners in each Class were given by the British Holstein Cattle Society.

lxxxviii *Award of Live Stock Prizes at Bristol, 1913.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 1372 II. (£6.)—JOHN BROMET, for *Routh Queen* 3326, black and white, born in 1900, bred by Percy Ford, Molecroft Grange, Beverley.
 1380 III. (£4.)—ADAM SMITH, Lochlands, Larbert, Stirlingshire, for *Lochlands Madge* 2442, black and white, born Oct. 17, 1900, calved May 7, 1913; s. *Lochlands Hugo* 407.
 1375 R. N. & H. C.—A. & J. BROWN, Hedges Farm, St. Albans, for *Hedges Miss Hook*

Class 182.—*British Holstein Heifers (in-milk), calved in 1910 or 1911.*

[4 entries, 1 absent.]

- 1363 I. (£10.)—JOHN BROMET, Golf Links Farm, Tadcaster, for *Garton Fullpail* 8154, black and white, born in May, 1910, calved June 18, 1913, bred by Richard Ford, Garton, Driffield; s. *Garton Baxendale* 163, d. *Garton Lady Fullpail* 1206 by *Park General Botha* 548.
 1384 II. (£6.)—MAJOR GEORGE R. POWELL, Tynewydd, Hirwaun, Glam., for *Cymric Crystal* 7142, black and white, born Jan. 13, 1910, calved May 18, 1913; s. *Hector Macdonald* 2nd, d. *Charlotte of Marden* by *Royal Duke*.
 1385 III. (£4.)—E. SEHMER, Wigginton Lodge, Tamworth, for *Wigginton Dutch Queen* 13588, black and white, born in 1911, calved May 15, 1913.

Class 183.—*British Holstein Heifers, calved in 1912.*

[7 entries, none absent.]

- 1391 I. (£10.)—ADAM SMITH, Lochlands, Larbert, Stirlingshire, for *Lochlands Mousmè* 10012, black and white, born May 16; s. *Lochlands President* 413, d. *Lochlands Madge* 2442 by *Lochlands Hugo* 407.
 1390 II. (£6.)—ADAM SMITH, for *Lochlands Hetty* 10006, black and white, born Jan. 2; s. *Lochlands President* 413, d. *Lochlands Hilda* 2484.
 1388 III. (£4.)—A. & J. BROWN, Hedges Farm, St. Albans, for *Hedges Mina* 8852, black and white, born Jan. 13; s. *Hedges Pure-split* 305, d. *Hedges Charm* 1722.
 1392 R. N. & H. C.—JIM SMITH, Greenhill Farm, Wealdstone, for *Greenhill May*.

Class 184.—*British Holstein Bulls, calved in or before 1910.*

[7 entries, 1 absent.]

- 1400 I. (£10.)—HENRY T. WILLETT, Monkton Parsonage, Ramsgate for *Monkton Man* of Kent 529, black and white, born Dec. 12, 1908; s. *Monkton John Bull* 525, d. *Monkton Molly* 2994.
 1394 II. (£6.)—A. & J. BROWN, Hedges Farm, St. Albans, for *Hedges Markeaton Brand* 297, black and white, born Nov. 7, 1910; s. *Hedges Hawkridge Duke* 293, d. *Hedges Bessie* 1088.
 1390 III. (£4.)—MRS. H. MULLINER, Clifton Court, Rugby, for *Bendrose Duke* 3rd 937, black and white, born Nov. 14, 1910, bred by Ernest H. Foxwood, Bendrose (Grange), Amersham, Bucks.; s. *Bendrose Duke* 35 d. *Bendrose Betsy* 258.
 1395 R. N. & H. C.—W. P. COWELL, The Lee, Elmdon Suffron Walden, for *Melford Squire*.

Class 185.—*British Holstein Bulls, calved in 1911 or 1912.*

[12 entries, 1 absent.]

- 1411 I. (£10.)—SIR PETER C. WALKER, BT., Osmaston Manor, Derby, for *Osmaston Premier* 1879, black and white, born July 24, 1911; s. *Terling Mercury's Boy* 720, d. *Terling Dilly* 3rd 3998 by *Terling Grand Parade* 703.
 1401 II. (£6.)—ARTHUR S. BOWLEY, Gilston Park, Harlow, for *Hedges Prince* of Doncaster 1485, black and white, born Dec. 22, 1911, bred by A. & J. Brown, Hedges Farm, St. Albans; s. *Park General Botha* 549, d. *Park Buttercup* 3086.
 1412 III. (£4.)—HENRY A. WARD, North Ormley, Newport Pagnell, for *Crawley Mascot* 1147, black and white, born Dec. 19, 1911, bred by Trevor Williams, Clock House, Byfleet, Surrey; s. *Upton Solomon* 807, d. *Bendrose Bessie* 211.
 1402 IV. (£3.)—A. & J. BROWN, Hedges Farm, St. Albans, for *Hedges Bonnie Laddie* 1423, black and white, born Aug. 3, 1913; s. *Hedges Pure-split* 305, d. *Hedges Bonnie Annie* 1098 by *Hedges Hawkridge Duke* 293.
 1410 R. N. & H. C.—MRS. TOWNSHEND, Gorstago Hall, Sandiway, Cheshire, for *Gorstago Duke Gouda*.

Class 186.—*Milk Yield Prizes, open to British Holstein Cows and Heifers entered in Classes 181 and 182 only.* [8 entries, 2 absent.]

- 1379 I. (£10.)—E. SEHMER, Wigginton Lodge, Tamworth, for *Wigginton Maggie* 13556, black and white, born in 1907, calved April 20, 1913, bred by Alfred Huttley, Derwards, Bockmng, Braintree.
 1384 II. (£6.)—MAJOR GEORGE R. POWELL, for *Cymric Crystal*. (See Class 182.)

Award of Live Stock Prizes at Bristol, 1913. lxxxix

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Jerseys.¹

N.B.—In the Jersey Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the Island Herd Book. A number without brackets indicates that the animal is registered in the English Jersey Herd Book.

Class 187.—Jersey (cows (in-milk), calved in or before 1909.

[15 entries, 10 absent.]

- 1439 I. (£10, & Champion.²)—ALEXANDER MILLER HALLETT, Goddington, Chesham, Kent, for *La Franchise 3rd* (vol. 22, p. 344), whole colour, born March 14, 1907 calved April 28, 1913, bred by E. G. D. Renoul, St. Martin's, Jersey; s. *Mabel's Raleigh* 9330, d. *Mr. Renoul's La Franchise* (9514) F.S.I.C.
- 1440 II. (£8.) JOSEPH BRUTON, 7 Prince's Street, Yeovil, for *Irish Lass* (vol. 18, p. 324), light brown, born Aug. 12, 1904, calved March 18, 1913, bred by Mrs. Mount Spencer, Hillylands, Oakhill, Bath; s. *Emerald 7797*, d. *Arcadia 2nd* by Duke of Orleans 5808.
- 1427 III. (£4.) JERSEY DE KNOOP, Calveley Hall, Tarporley, for *Seamless* (vol. 21, p. 116), broken fawn, born Aug. 25, 1906, calved April 22, 1913, bred by E. Chabot, St. Clements, Jersey; s. *Volunteers Lad* 9102, d. *Heardless* (11932) P.S.C. by *Hearty Fox* 8236.
- 1429 IV. (£3.) —MRS. EVELYN, Wotton House, Dorking, for *Wissy Maiden* (vol. 22, p. 451), broken colour, born April 25, 1907, calved June 8, 1913, bred by C. P. Messervy, Trinity, Jersey; s. *Combination* 8845, d. *Wissy* (8837) F.S.I.C.
- 1438 V. (£3.) —ALEXANDER MILLER HALLETT, for *Goddington Foxglove* (vol. 19, p. 310), whole colour, born April 21, 1905, calved April 1, 1913; s. *Flying Foam* 7204, d. *Meadow Girl* by *Prism* 6903.
- 1445 R. N. & H. O.—LORD ROTHSCHILD, Tring Park, Herts., for *Laxton Lady*.

Class 188.—Jersey Heifers (in-milk), calved in 1910.

[15 entries, 4 absent.]

- 1460 I. (£10, & R. N. for Champion.²)—LORD ROTHSCHILD, Tring Park, Herts., for *Nuriel's Oxford Daisy* (10884) P.S.I.C., whole colour, born April 22, calved May 7, 1913, bred by G. J. Queree, St. Peter's, Jersey; s. *Mon Plaisir's Wonder* 10330, d. *Oxford Nuriel* (14043) P.S.I.C. by *Oxford Knight* 9719.
- 1468 II. (£8.) —LORD ROTHSCHILD, for *Evelyns* (10745) F.S.H.C., broken colour born July 21, calved June 12, 1913, bred by F. Touzel, Grouville, Jersey.
- 1470 III. (£4.) —J. H. SMITH-BARRY, Stowell Park, Pewsey, Wilts., for *Mauvette*, dark fawn, born Aug. 2, calved May 10, 1913; s. *Silver Fox* 10097, d. *Margold* (vol. 15, p. 538) by *Sportive* 7037.
- 1458 IV. (£3.) —JOSEPH CARNON, Crystalbrook, Theydon Bois, Essex, for *Glorious Crystal 2nd*, whole colour, born Aug. 28, calved May 9, 1913; s. *Eversley Lad* 10283, d. *Glorious Crystal* (vol. 23, p. 312) by *Campbell's Sultan* 9524.
- 1469 R. N. & H. O.—JOSEPH CARNON, for *Xmas Rose*.

Class 189.—Jersey Heifers (in-milk), calved in 1911.

[31 entries, 12 absent.]

- 1495 I. (£10.) LORD ROTHSCHILD, Tring Park, Herts., for *Royal Lass*, whole colour, born April 8, calved June 7, 1913; bred by H. Le M. Buet, St. Mary's, Jersey; s. *Royal Guide* 10077, d. *Jeanette 5th* (12876) P.S.I.C. by *Vernum* 8749.
- 1480 II. (£8.) MRS. C. M. MCINTOSH, Havering Park, Romford, for *Gloxalia*, whole colour, born March 25, calved April 17, 1913, bred by James Jockey, Poulton Priory, Fairfield, Glou.; s. *Fairy's Duc* 10507, d. *Gloxinia* (vol. 21, p. 310) by *Chief Justice* 7138.
- 1479 III. (£4.) —MRS. EVELYN, Wotton House, Dorking, for *Wotton Omelette*, whole colour, born May 15, calved May 22, 1913; s. *Pavilion's Noble* 10075, d. *Wotton Easter Ring* (vol. 23, p. 441) by *Mourier's Sultan* 10014.
- 1478 IV. (£3.) —MRS. EVELYN, for *Wotton Daisy Noble*, whole colour, born Feb. 8, calved May 12, 1913; s. *Pavilion's Noble* 10035, d. *Sweet Daisy* (vol. 22, p. 430) by *Handyman* 10271.
- 1497 V. (£3.) —J. H. SMITH-BARRY, Stowell Park, Pewsey, Wilts., for *Last of the Lilies*, fawn, born March 2, calved May 8, 1913; s. *Flour de Lys* 9583, d. *Lydia Languish* (vol. 23, p. 122) by *Gay Boy* 7610.
- 1473 R. N. & H. O.—EARL CADOGAN, K.G., Culford Hall, Bury St. Edmund's, for *Grania*, whole colour, born Feb. 18, calved June 5, 1913; s. *Elderberry's Lord* 9897, d. *Belle Mahone* (vol. 22, p. 251) by *Topper* 8383.

Class 190.—Jersey Heifers, calved in 1912. [23 entries, 5 absent.]

- 1520 I. (£10.)—LORD ROTHSCHILD, Tring Park, Herts., for *Myrtle Blossom*, broken colour, born May 10; s. *Golden Fern's Noble* 10628, d. *Bloomfield Belle 2nd* by *Halburton's Sultan* 10634.

¹ £30 towards these Prizes were given by the English Jersey Cattle Society.

² Champion Prize of £5 given by the English Jersey Cattle Society for the best Cow or Heifer in Classes 187-190.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 1512 II. (£6.)—MRS. EVELYN, Wotton House, Dorking, for Wotton Flip, whole colour, born April 8; s. Illustrious 10289, d. Wotton Easter Egg (vol. 23, p. 144) by Mourier's Sultan 10014.
 1521 III. (£4.)—LORD ROTHSCHILD, for Plymouth Girl, whole colour, born Aug. 14; s. Eagle's Chief, d. Vesta's Plymouth by Plymouth Lad 9388.
 1505 IV. (£3.)—JOSEPH CARSON, Crystalbrook, Theydon Bois, Essex, for Bright Snowdrop, white colour, born May 10; s. Snowdrop's Champion, d. Crystal Yew.
 1524 V. (£3.)—HORACE WALKER, Beach, Bitton, Glos., for Fairy Queen Fern, born March 22, bred by The Asylum Committee, St. Saviours, Jersey; s. Golden Fern's Noble 10628, d. Fairy 3rd by Dorsetshire (2914).
 1513 R. N. & H. C.—CAPT. M. HILL, Westwood House, West Bergholt, Essex, for Westwood Flora.

Class 191.—Jersey Cows or Heifers (in-milk), bred by Exhibitor, and sired in Great Britain or Ireland. Open to Animals entered in Classes 187, 188, and 189 only. [15 entries, 4 absent.]

- 1488 I. (£10.)—ALEXANDER MILLER-HALLETT, for Goddington Foxglove. (See Class 187.)
 1414 II. (£6.)—ERNEST BEWLEY, Danum, Rathgar, co. Dublin, for Lilac (vol. 21, p. 349), nearly whole colour, born Feb. 10, 1908, calved April 14, 1913; s. Oakdale's Prince 9388, d. Fricanna 2nd by Leda's Golden Lad 7568.
 1430 III. (£4.)—MRS. C. M. S. EYRES-MONSELL, Dumbleton Hall, Evesham, for Fleetwing 3rd (vol. 23, p. 295), whole colour, born April 14, 1909, calved March 18, 1913; s. Monk 9353, d. Fleetwing 2nd by Hamley's Golden Lad 7534.
 1470 R. N. & H. C.—J. H. SMITH-BARRY, Stowell Park, Pewsey, for Mauvette.

Class 192.—Jersey Bulls, calved in 1908, 1909, or 1910.

[9 entries, none absent.]

- 1530 I. (£10, & Champion.)—ALEXANDER MILLER-HALLETT, Goddington, Chelsfield, Kent, for Goddington Winks 10253, broken colour, born July 31, 1908; s. Honest Lad 9279, d. Young Winks 4th by Flower's Hero 6713.
 1537 II. (£6.)—W. M. CAZALET, Fairlawne, Tonbridge, for Highness 10641, whole colour, born Dec. 3, 1909, bred by F. P. Helleur, St. Lawrence, Jersey; s. Roebay's Prince 10424, d. Golden Atalanta by Oakland's Sailor 9714.
 1528 III. (£4.)—CAPT. M. HILL, Westwood House, West Bergholt, Essex, for Crown Prince 10573, whole colour, born March 13, 1909, bred by Mrs. C. M. McIntosh, Havering Park, Romford; s. Jolly Jim 8564, d. Coronation by Grey Scot 8581.
 1532 R. N. & H. C.—LORD ROTHSCHILD, Tring Park, Herts., for Fontaine's Star.

Class 193.—Jersey Bulls, calved in 1911. [15 entries, 2 absent.]

- 1548 I. (£10, & R. N. for Champion.)—HORACE WALKER, Beach, Bitton, Glos., for Pallas Noble, broken colour, born March 14, bred by N. du Fen, Junr., Jersey; s. Noble of Oaklands (3908), d. Pallas 2nd by Sovereign (2834).
 1534 II. (£8.)—JOSEPH BRUTTON, 7 Princes Street, Yeovil, for Prince Guider, gray, born Sept. 2, bred by Mr. Eustache, St. Martin's, Jersey; s. Royal Guide (4101), d. Princess Daisy (13447) by Holloway's Fox (3631).
 1545 III. (£4.)—DAME EMILY FRANCES SMYTH, Ashton Court, Bristol, for Luby, whole colour, born July 11, bred by J. Stuckey, Wharfe Knot, Bedford; s. Rochelle's Lass Boy 10414, d. Lulu (vol. 21, p. 124), by Ruben 10080.
 1387 IV. (£3.)—DR. H. CORNER, Brook House, Southgate, Middlesex, for Golden Leda's Stockwell, nearly whole colour, born June 10; s. Lord Stockwell 9323, d. Federation 2nd (vol. 19, p. 300) by Leda's Golden Lad 7568.
 1542 R. N. & H. C.—O. F. MOSLEY, Leasingham, Slonford, for Noble Sultan's Boy.

Class 194.—Jersey Bulls, calved in 1912. [18 entries, 5 absent.]

- 1563 I. (£10.)—LORD ROTHSCHILD, Tring Park, Herts., for Castor's Premier, whole colour, born March 25, bred by P. J. Bree, Groveville, Jersey; s. Combination's Premier (4689), d. Lass of Le Source 2nd (15466) P.S.H.C. by Golden Onford 9249.
 1558 II. (£6.)—ALEXANDER MILLER-HALLETT, Goddington, Chelsfield, Kent, for Goddington Noble 11th, whole colour, born April 18; s. Goddington Winks 10253, d. Goddington Bagatelle (vol. 20, p. 317) by Rover of Oaklands 8348.
 1552 III. (£4.)—MISS FINDERBY, Beckington House, Beckington, Bath, for Beckington Champion, brown, born March 20; s. Century's Champion, d. Mourier Belle 14th.
 1566 IV. (£3.)—J. H. SMITH-BARRY, Stowell Park, Pewsey, Wilts., for Reynard the Fox, dark grey, born March 26; s. May Fox 10705, d. Maturine 2nd (vol. 23, p. 351) by Oaklands' Sailor 9714.
 1551 R. N. & H. C.—JERSEY DE KNOOP, Calveley Hall, Tarporley, for Calveley Peer.

¹ Champion Prize of £5 given by the English Jersey Cattle Society for the best Bull in Classes 192-194.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 195.—Milk Yield Prizes, open to Jersey Cows and Heifers entered in Classes 187, 188, and 189 only. [21 entries, 4 absent.]

- 1145 I. (£10).—LORD ROTHSCHILD, Tring Park, Herts., for Laxton Lady (vol. 23, p. 335) whole colour, born Dec. 5, 1906, calved March 21, 1913, bred by O Benest, Trinity, Jersey; s. Laxton 9307, d. Lady Warwick (10738) P.S.C. by Picton 3rd 1886.
 1450 II. (£6).—J. H. SMITH-BARRY, Stowell Park, Pewsey, Wilts., for Marionette (vol. 18, p. 359), dark fawn, born Oct. 3, 1904, calved Feb. 13, 1913; s. Gay Boy 7510, d. Marigold by Spotive 7037.
 1471 III. (£4).—J. H. SMITH-BARRY, for New Year's Gift (vol. 21, p. 383), cream, born Jan. 1, 1907, calved Jan. 15, 1913; s. Oxford Sunbeam 8650, d. Leylands Gift by Lord Charles Beresford 5961.
 1448 R. N. & H. C.—J. H. SMITH-BARRY, for Caprice.

Guernseys.¹

N.B.—Unless otherwise stated, the numbers refer to the English Guernsey Herd Book.

Class 196.—Guernsey Cows (in-milk), calved in or before 1908.

[14 entries, 3 absent.]

- 1581 I. (£10).—CANON S. R. RAFFLES-FLINT, Nansawvan, Ladoek, Cornwall, for Ladoek Princess 7333, fawn and white, born Jan. 9, 1907, calved April 15, 1913; s. Trewince True Boy 1728, d. Ladoek Lily 6940 by Harley of Chitral 1183 P.S., R.G.A.S.
 1570 II. (£6).—SIR EVERARD A. HAMBRO, K.C.V.O., Hayes Place, Hayes, Kent, for Wena 5700, red and white, born March 2, 1900, calved May 4, 1913, bred by R. Herivel, Alderney; s. Liberty, d. Daisy 1st.
 1577 III. (£4).—H. F. PLUMPTRE, Goodnestone Park, Canterbury, for Ashburnham Amabel 7153, red and white, born June 6, 1907, calved March 26, 1913, bred by the late Earl of Ashburnham, Batle, Sussex; s. Charmant of the Gron 1808, d. Darling Mabel 5083 by Compact 1065 P.S., R.G.A.S.
 1589 R. N. & H. C.—SIR EVERARD A. HAMBRO, K.C.V.O., for Itchen Lady May.

Class 197.—Guernsey Cows or Heifers (in-milk), calved in 1909 or 1910.

[7 entries, 1 absent.]

- 1588 I. (£10).—J. F. REMNANT, M.P., The Grange, Twyford, Berks., for Treacle 3rd 8280, dark fawn and white, born Jan. 14, 1909, calved April 26, 1913, bred by J. H. Borrer, Angerton, Dursley; s. King Cup 1850, d. Sweetsome 2nd 6014 by Milford Easter Gift 1228.
 1586 II. (£6).—SIR EVERARD A. HAMBRO, K.C.V.O., Hayes Place, Hayes, Kent, for Hayes Express 6th 8550, fawn and white, born May 14, 1910, calved May 18, 1913; s. Hayes Branch 2034, d. Hayes Express 3rd 7296 by Coronation King 1556.
 1587 III. (£4).—CANON S. R. RAFFLES-FLINT, Nansawvan, Ladoek, Cornwall, for Ladoek Beauty 8136, fawn and white, born Jan. 23, 1906, calved April 27, 1913; s. Brave Boy 3rd 1806, d. Ladoek Lily 6039 by Squire of the Sages 1818 P.S., R.G.A.S.
 1582 R. N. & H. C.—MRS. R. O. BAINBRIDGE, Elfordleigh, Plympton, Devon, for Elfordleigh Judy 2nd.

Class 198.—Guernsey Heifers, calved in 1911. [13 entries, 2 absent.]

- 1592 I. (£10).—SIR EVERARD A. HAMBRO, K.C.V.O., Hayes Place, Hayes, Kent, for Hayes Polly 9000, fawn and white, born May 6; s. Guiding Star of Les Belles 2393, d. Polly of La Croix 9th 7414 by Antonio 1733.
 1601 II. (£6).—FRANK PRATT-BARLOW, Lynchmere House, Haslemere, for Violet of the Vrangue 6246, fawn, born March 16, bred by John Sherwill, Vrangue, St. Peter Port, Guernsey; s. Mushor of King's Mills Lodge 2296 P.S., R.G.A.S. d. Jenemies Violet 8204 P.S., R.G.A.S. by Squire de la Vieille Rue 1687 R.G.A.S.
 1593 III. (£4).—SIR EVERARD A. HAMBRO, K.C.V.O., Milton Abbey, Blandford, for Milton Blue Bell 3rd 8101, fawn and white, born Sept. 1; s. Hayes Briar 2nd 2144 d. Milton Blue Bell of the Spurs 1st 7779 by Lord Mar 1737 P.S., R.G.A.S.
 1590 R. N. & H. C.—G. F. FERRAND, Morland Hall, Alton, Hants., for Emley Belle 2nd.

Class 199.—Guernsey Heifers, calved in 1912. [18 entries, 2 absent.]

- 1617 I. (£10).—FRANK PRATT-BARLOW, Lynchmere House, Haslemere, for Lynchmere Meadow Sweet 2nd 9572, red, born July 21; s. Raymond of the Vrangue 2361, d. Olaford Meadow Sweet 8015 by Chieftain 65 P.S., R.G.A.S.
 1606 II. (£6).—SIR EVERARD A. HAMBRO, K.C.V.O., Hayes Place, Hayes, Kent, for Hayes Rose 2nd 8495, fawn and white, born July 31; s. Charmant 4th of the Gron 2124, d. Rose des Houards 82nd 8701 by Loyal of the Gron 2056.
 1605 III. (£4).—SIR EVERARD A. HAMBRO, K.C.V.O., for Hayes Bob 3rd 9485, fawn and white, born May 11; s. Charmant 4th of the Gron 2124, d. Bob 31st 8363 by Loyal of the Gron 2056.

¹ £40 towards these Prizes were given by the English Guernsey Cattle Society.

xcii *Award of Live Stock Prizes at Bristol, 1913.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

1607 IV. (£3.)—SIR EVERARD A. HAMBRO, K.C.V.O., Milton Abbey, Blandford, for *Milton Duchess of the Chene* 7th 4590, fawn and white, born March 5; s. *Hayes Briar* 2nd 2144, d. *Milton Duchess of the Chene* 2nd 7780 by *Milton Prince* 1870.

1608 R. N. & H. C.—W. H. N. GOSCHEN, Durrington House, Harlow, for *Juno of La Ville*.

Class 200.—Guernsey Bulls, calved in 1908, 1909, 1910, or 1911.

[9 entries, none absent.]

1622 I. (£10.)—SIR EVERARD A. HAMBRO, K.C.V.O., Hayes Place, Hayes, Kent, for *Flora's Raymond* 2585, fawn and white, born April 7, 1911, bred by F. Le Parmentier, Effards, Castel, Guernsey; s. *Raymond of the Preel* 4th 1911 P.S., R.G.A.S., d. *Flora* 3rd of the Effards 3453 F.S., R.G.A.S.

1620 II. (£6.)—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, for *Raymond's Joe* 2362, orange fawn and white, born April 30, 1910, bred by J. Le Page, Neuve Maison, Castel, Guernsey; s. *Raymond of the Preel* 4th 1911 P.S., R.G.A.S., d. *Bon Espoir* 9th 4547 P.S., R.G.A.S.

1621 III. (£4.)—G. F. FERRAND, Morland Hall, Alton, for *Chieftain of Hawkley* 2238, fawn and white, born Dec. 14, 1903, bred by Peter Mith, Puhau, St. Sampson's, Guernsey; s. *Galaxy's Sequel* 1559 P.S., R.G.A.S., d. *Dolly of Puhau* 3180 F.S., R.G.A.S., by *Loyal of the Capelles* 1267 P.S., R.G.A.S.

1626 R. N. & H. C.—G. OAKLEY, Row Garden, Wood, Charlwood, Surrey, for *Brittleware Robin* 2nd.

Class 201.—Guernsey Bulls, calved in 1912. [11 entries, 1 absent.]

1637 I. (£10.)—H. F. PLUMPTRE, Goodnestone Park, Canterbury, for *Royal Sequel* 2nd 2639, fawn and white, born Aug. 23; s. *Royal Sequel* 2511, d. *Ranunculus* 9th 8215 by *Golden Noble* 1830.

1636 II. (£6.)—H. F. PLUMPTRE, for *Golden Casket* 3rd 2586, fawn, born May 23; s. *Golden Casket* 2138, d. *Muriel* 22nd 7025 by *Roland of Seaview* 10th 1621.

1631 III. (£4.)—SIR EVERARD A. HAMBRO, K.C.V.O., Hayes Place, Hayes, Kent, for *Hayes Cherub* 3rd 2395, fawn and white, born May 29; s. *Hayes Cherub* 2nd 2395, d. *Snowdrop* 7887 by *Jumbo* 59 F.S., R.G.A.S.

1630 R. N. & H. C.—W. H. N. GOSCHEN, Durrington House, Harlow, for *May's Governor*.

Class 202.—Milk Yield Prizes, open to Guernsey Cows and Heifers entered in Classes 196 and 197 only. [13 entries, 2 absent.]

1574 I. (£10.)—SIR HENRY F. LENNARD, BT, Wickham Court, West Wickham, Kent, for *Wickham Fancy* 2nd 7133, fawn and white, born Nov. 3, 1903, calved March 28, 1913, bred by H. Russell, Wood Lodge, West Wickham; s. *Hanbury* 1009, d. *Doulla Galla's Fancy* 36th P.S., R.G.A.S.

1581 II. (£6.)—CANON S. R. RAFFLES-FLINT, for *Ladock Princess* (See Class 196.)

1568 III. (£4.)—W. T. CURTIS, Fitzwilla, Ewell, Surrey, for *Polly* 3rd of the *Mill* 6530 P.S., R.G.A.S., light fawn, born Oct. 9, 1905, calved March 24, 1913, bred by J. Martin, Kings Mill, Castel, Guernsey; s. *Golden Hero* 1507 P.S., R.G.A.S., d. *Polly* 2nd of the *Mill* 2749 P.S., R.G.A.S.

1584 R. N. & H. C.—J. F. BENNANT, M.P., for *Treacle* 3rd. (See Class 197.)

Kerries.¹

N.B.—In the Kerry Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the *Irish Kerry Herd Book*. A number without brackets indicates that the animal is registered in the *English Kerry Herd Book*.

Class 203.—Kerry Cows (in-milk), calved in or before 1909.

[11 entries, 2 absent.]

1643 I. (£10, & Champion.)—L. CURRIE, Minley Manor, Farnborough, Hants, for *Minley Mistress* 1233 F.S., born in 1903, calved May 23, 1913, breeder unknown.

1646 II. (£6.)—R. TAIT ROBERTSON, The Hutch, Malahide, Co. Dublin, for *Walton Can Can* 935, born in 1905, calved May 24, 1913, breeder unknown.

1642 III. (£4.)—L. CURRIE, for *Duv Rosebud* (1370), born Dec. 10, 1906, calved May 5, 1913, bred by J. Neill, The Park, Killarney; s. *Duv Daniel* (590), d. *Duv Divine* (3231) F.S.

1649 R. N. & H. C.—T. WAITE, Highlands, Redhill, for *Kilmorna Waterville* 1st.

¹ £15 towards these Prizes were given by the English Kerry and Dexter Cattle Society.

² Challenge Cup given by the English Kerry and Dexter Cattle Society for the best Animal in Classes 203-206.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 204.—Kerry Heifers (in-milk), calved in 1910.

[2 entries, none absent.]

- 1052 I. (£10).—R. TAIT ROBERTSON, The Hutch, Malahide, Co. Dublin, for *La Mancha Rag Time*, born in 1910, calved May 15, 1913, breeder unknown.

Class 205.—Kerry Heifers, calved in 1911 or 1912.

[5 entries, 1 absent.]

- 1057 I. (£10).—R. TAIT ROBERTSON, The Hutch, Malahide, Co. Dublin, for *La Mancha Patricia*, born in 1911, breeder unknown.
 1058 II. (£6).—A. ARTHUR LYLE, Red House, Amersham Common, Bucks, for *Doreen*, born May 15, 1911; s. Shamus, d. Norah.
 1059 III. (£4).—THE DUCHESSES OF NEWCASTLE, Hardwick Grange, Clumber Park, Work-up, for *Hardwick Jeannie* 3rd 1101, born April 18, 1911; s. Kilmorna Duke 18th 252, d. Hardwick Jeannie 679 F.S.

Class 206.—Kerry Bulls, calved in 1908, 1909, 1910, or 1911.

[7 entries, 1 absent.]

- 1058 I. (£10, & R. N. for Champion).—JOHN L. AMES, Thistlethwaugh, Longhorley, for *La Mancha Lifeguard* 281, born April 27, 1911, bred by R. Tait Robertson, The Hutch, Malahide; s. La Mancha Mr. Dooley 237 d. Castletough Duv (3383) by Killeavy (550).
 1061 II. (£6).—T. WAITE, Highlands, Redhill, for *Mangerton Chief* 281, born March 4 1911; s. Kilmorna Duke 17th 251, d. Duv Darling 2nd 1365 by Duv Daniel (390).
 1061 III. (£4).—R. TAIT ROBERTSON, The Hutch, Malahide, Co. Dublin, for *Castletough Duke* (715), born April 15, 1911, bred by John Hilliard, Lake Hotel, Killarney; s. La Mancha Mr. Dooley (700), d. Castletough Hawthorn (3383) by Duv Daniel (390).
 1063 R. N. & H. C.—T. WAITE, for *La Mancha Mr. Dooley*.

Class 207.—Milk Yield Prizes, open to Kerry Cows and Heifers entered in

Classes 203 and 204 only. [7 entries, 1 absent.]

- 1049 I. (£10).—T. WAITE, Highlands, Redhill, for *Kilmorna Waterville* 1st (3104), born in 1900, calved Feb. 17, 1913, breeder unknown.
 1049 II. (£6).—L. CURRIE, for *Duv Rosebud*. (See Class 203.)
 1049 III. (£4).—L. CURRIE, for *Minley Mistress*. (See Class 203.)
 1047 E. N. & H. C.—EDMUND ROYDS, M.P., for *Caythorpe Kitty*.

Dexters.²

N.B.—In the Dexter Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the Irish Dexter Herd Book. A number without brackets indicates that the animal is registered in the English Dexter Herd Book.

Class 208.—Dexter Cows (in-milk), calved in or before 1909.

[12 entries, 3 absent.]

- 1071 I. (£10).—THE HON. MRS. CLAUD PORTMAN, Goldicote, Stratford-on-Avon, for *La Mancha Hard to Find* 1338, red, born April 9, 1901, calved March 13, 1913, bred by R. Tait Robertson, The Hutch, Malahide; s. La Mancha What Next 279, d. La Mancha Dolly Duv Dream 1185 F.S.
 1060 II. (£6).—HIS MAJESTY THE KING Sandringham, for *Dinah* 2017, black, born in 1907, calved May 25, 1913, breeder unknown.
 1072 III. (£4).—H. MARTIN GIBBS, Barrow Court, Bristol, for *Barrow Buttercup* 2nd 1728, black, born June 4, 1909, calved May 4, 1913; s. Barrow Count 383, d. Barrow Buttercup 1078 F.S.
 1070 E. N. & H. C.—BALDOMERO DE BERTODANO, Cowbridge House, Malnesbury, for *Cowbridge Enid*.

Class 209.—Dexter Heifers (in-milk), calved in 1910. [9 entries, 1 absent.]

- 1078 I. (£10).—LIEUT.-COL. THE HON. BEN BATHURST, M.P., The Cranham, Cirencester, for *Alpha*, black, born July 14, calved May 18, 1913; s. Dick 2nd 429, d. Hope by Good Luck 337.
 1082 II. (£6).—THE HON. MRS. CLAUD PORTMAN, Goldicote, Stratford-on-Avon, for *Black Child* 2003, black, born in Aug., calved March 24, 1913, breeder unknown.
 1080 III. (£4).—H. MARTIN GIBBS, Barrow Court, Bristol, for *La Mancha Dodo* 1052 F.S., black, born in 1910, calved May 25, 1913, breeder unknown.
 1079 E. N. & H. C.—H. MARTIN GIBBS, for *Barrow Fair Maid* 2nd.

¹ Challenge Cup given by the English Kerry and Dexter Cattle Society for the best animal in Classes 203-206.

² £15 towards these Prizes were given by the English Kerry and Dexter Cattle Society.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor"]

Class 210.—Dexter Heifers, calved in 1911 or 1912. [13 entries, none absent.]

- 1688 I. (£10, & R. N. for Champion.)—BALDOMERO DE BERTODANO Cowbridge House, Malmesbury, for Cowbridge Flirt 2nd 1889, black, born May 6th, 1911; s. Cowbridge Sir Dandy 428, d. Cowbridge Flirt 1752 by Cowbridge General 1885
 1687 II. (£8.)—HIS MAJESTY THE KING, Sandringham, for black heifer, born in 1911, breeder unknown.
 1687 III. (£4.)—T. HOGG ROBERTSON, La Mancha, Malahide, Co. Dublin, for Castletough Plum (2624), black, born May 9 1911, bred by John Hilliard, Lake Hotel, Killarney. s. Plantol (564), d. Castletough Blackberry (2438) by Goat Sam 2nd (558)
 1691 R. N. & H. C.—H. MARTIN GIBBS, Barrow Court, Bristol, for Barrow Emerald 3rd, black, born May 13, 1911; s. Barrow Bacchus 419, d. Barrow Emerald 2nd 1631 by Barrow Captain.

Class 211.—Dexter Bulls, calved in 1908, 1909, 1910, or 1911.

[11 entries, 1 absent.]

- 1099 I. (£10, & Champion.)—HIS MAJESTY THE KING, Sandringham, for Jack Robin 507, black, born in 1910, breeder unknown.
 1702 II. (£6.)—BALDOMERO DE BERTODANO, Cowbridge House, Malmesbury, for Cowbridge Hero 465, black, born in March, 1909, breeder unknown.
 1700 III. (£4.)—HIS MAJESTY THE KING, for Robin Hood 489, black, born in 1909 breeder unknown.
 1705 R. N. & H. C.—H. MARTIN GIBBS, Barrow Court, Bristol, for Barrow Orphan.

Class 212.—Milk Yield Prizes, open to Dexter Cows and Heifers entered in Classes 208 and 209 only. [8 entries, 2 absent.]

- 1686 I. (£10.)—HIS MAJESTY THE KING, for Dinah. (See Class 208)
 1671 II. (£6.)—BALDOMERO DE BERTODANO, Cowbridge House, Malmesbury, for Cowbridge Shelah 1875 F.S., black, born in March, 1909, calved June 8, 1913, breeder unknown.
 1677 III. (£4.)—HIS MAJESTY THE KING, for Dusky 2018, black, born in 1910, calved March 1, 1913, breeder unknown.
 1678 R. N. & H. C.—H. MARTIN GIBBS, Barrow Court, Bristol, for Barrow Duchess 3rd.

Dairy Cattle.²

Class 213.—Dairy Cows (in-milk), calved in or before 1909.

[8 entries, 1 absent.]

- 1718 I. (£10.)—R. W. HOBBS & SONS, Kilmacrott, Lechlade, for Helpmate 11th (Shorthorn), roan born Oct. 24 1908, calved May 28, 1913; s. Baron Waterloo 91210, d. Helpmate 4th by Troy in 73777
 1715 II. (£6.)—JAMES SLEPPY, Redlynch Park, Chewton Keynsham, Bristol, for Chewton Melody (Shorthorn), red born Jan. 2, 1907, calved June 3, 1913; s. Strathmo Lavender, d. Melody
 1712 III. (£4.)—JOHN EVENS, Burton, Lincoln, for Clifton Beauty (Lincol. Red Shorthorn), born in 1907, calved March 30, 1913, bred by W. R. Scorer; s. Miamton Lancer 2906.
 1714 R. N. & H. C.—HENRY MATTHEWS, Down Farm, Winterbourne, Bristol, for Perfection.

Class 214.—Dairy Cows (in-milk), calved in or after 1910.

[5 entries, none absent.]

- 1720 I. (£10.)—R. W. HOBBS & SONS, Kilmacrott, Lechlade, for Souvenir (vol. 57, p. 1183) (Shorthorn), white, born May 20, 1910, calved June 11, 1913, bred by Lord Rothschild, Tring Park, Herts; s. Dreadnought 102049, d. Gilt 2nd by Stanley 77954.
 1719 II. (£6.)—JOHN EVENS, Burton, Lincoln, for Burton Patty 3rd (Lincol. Red Shorthorn), born March 1, 1910, calved May 5, 1913, bred by Mr. Gilliat, Potterhanworth; s. Field Cornet 2715, d. by Burlevan 2122
 1723 III. (£4.)—JAMES SLEPPY, Redlynch Park, Chewton Keynsham, Bristol, for Model Maid 2nd (Shorthorn), roan, born May 20, 1910, calved May 27, 1913; s. Woolmer s Victor 5th, d. Model Maid by Cadet 83016.
 1718 R. N. & H. C.—JOHN EVENS, for Burton Amy 2nd.

¹ Challenge Cup given by the English Kerry and Dexter Cattle Society for the best animal in Classes 208-211

² Prizes given by the Bristol Local Committee.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Butter Tests.¹ [66 entries, 8 absent.]

Class 215a.—*Cows (in-milk), exceeding 900 lb. live weight.*

- 944 I. (£15).—HENRY NEESHAM, for Canwick Cherry 2nd. (See Class 119.)
 1418 II. (£10, & B. M.)—J. H. SMITH-BARRY, Stowell Park, Pewsey, Wilts. for Caprice (vol. 20, p. 373), fawn, born July 28, 1905, calved Feb. 1, 1913; s. Oxford Sunbeam 8850, d. Captious by Geonnus Ltd 8782.
 1574 III. (£5).—SIR HENRY F. LENNARD, BT, for Wickham Fancy 2nd. (See Class 202.)

Class 215b.—*Cows (in-milk) not exceeding 900 lb. live weight.*

- 1445 I. (£15, & G. M.)—LORD ROTHSCHILD, for Laxton Lady. (See Class 195.)
 1450 II. (£10, & S. M.)—J. H. SMITH-BARRY, for Marionette. (See Class 195.)
 1461 III. (£5). J. H. SMITH-BARRY, for New Year's Gift. (See Class 195.)

SHEEP.

Oxford Downs.

Class 216.—*Oxford Down Shearling Rams.* [16 entries, none absent.]

- 1734 I. (£10), & 1735 II. (£5).—JAMES HORLOCK, Cowley Manor, Cheltenham
 1731 III. (£3), & 1733 R. N. & H. C.—JAMES T. HOBBS, Maisey Hampton, Fairford, Glos.

Class 217.—*Oxford Down Ram Lambs.*² [10 entries, 1 absent.]

- 1748 I. (£10).—H. W. STILGOE, The Grounds, Adderbury, Banbury.
 1749 II. (£5).—THOMAS RICH, Aldsworth, Northleach, Glos.
 1741 III. (£3).—JAMES T. HOBBS, Maisey Hampton, Fairford, Glos.
 1739 R. N. & H. C.—GEORGE ADAMS & SONS, Royal Prize Farm, Faringdon.

Class 218.—*Three Oxford Down Ram Lambs.* [8 entries, none absent.]

- 1751 I. (£10).—JAMES T. HOBBS, Maisey Hampton, Fairford, Glos.
 1751 II. (£5).—W. J. P. READING & SONS, Rectory Farm, Langford, Lechlade.
 1749 III. (£3).—GEORGE ADAMS & SONS, Royal Prize Farm, Faringdon.
 1755 R. N. & H. C.—THOMAS RICH, Aldsworth, Northleach, Glos.

Class 219.—*Three Oxford Down Shearling Does.* [8 entries, none absent.]

- 1700 I. (£10).—JAMES T. HOBBS, Maisey Hampton, Fairford, Glos.
 1742 II. (£5), & 1763 R. N. & H. C.—JAMES HORLOCK, Cowley Manor, Cheltenham.
 1750 III. (£3).—MISS ALICE DE ROTHSCHILD, Waddesdon Manor, Aylesbury.

Class 220.—*Three Oxford Down Ewe Lambs.* [9 entries, none absent.]

- 1767 I. (£10).—JAMES T. HOBBS, Maisey Hampton, Fairford, Glos.
 1773 II. (£5).—H. W. STILGOE, The Grounds, Adderbury, Banbury.
 1765 III. (£3).—GEORGE ADAMS & SONS, Royal Prize Farm, Faringdon.
 1769 R. N. & H. C.—JAMES HORLOCK, Cowley Manor, Cheltenham.

Shropshires.⁴

Class 221.—*Shropshire Two-Shear Rams.* [14 entries, none absent.]

- 1787 I. (£10), & 1788 R. N. & H. C.—ALFRED TANNER, Shrawardine, Shrewsbury.
 1775 II. (£5).—FRANK BIRBY, Hardwicke Grange, Shrewsbury.
 1782 III. (£3).—MRS. W. F. INGE, Thorpe Hall, Tamworth, for Thorpe Templar.
 1764 IV. (£2).—THOMAS H. MINTON, Montford, Shrewsbury.

Class 222.—*Shropshire Shearling Rams.* [21 entries, 3 absent.]

- 1788 I. (£10) & 1789 II. (£5).—A. S. BERRY, Shenstone Hall, Lichfield.
 1797 III. (£3).—LORD RICHARD CAVENDISH, Holker Hall, Cartmel.
 1809 IV. (£2).—ALFRED TANNER, Shrawardine, Shrewsbury.
 1793 R. N. & H. C.—RICHARD E. BIRCH, Bryn Euryn, Colwyn Bay.

¹ Prizes given by the English Jersey Cattle Society.

² Gold Medal, Silver Medal, and Bronze Medal given by the English Jersey Cattle Society for the three Jersey animals obtaining the greatest number of points in the Butter Tests.

³ Prizes given by the Oxford Down Sheep Breeders' Association.

⁴ £45 towards these Prizes were given by the Shropshire Sheep Breeders' Association.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 223.—Three Shropshire Shearling Rams. [11 entries, 1 absent.]

- 1814 I. (£15).—MRS. W. F. INGE, Thorpe Hill, Tamworth
 1818 II. (£10).—ALFRED TANNER, Shrewardine, Shrewsbury.
 1819 III. (£5).—THOMAS S. MINTON, Montford, Shrewsbury.
 1813 IV. (£2).—LORD RICHARD CAVENDISH, Holker Hall, Cark-in-Chutmel.
 1811 R. N. & H. C.—RICHARD E. BIRCH, Bryn Eury, Colwyn Bay.

Class 224.—Three Shropshire Ram Lambs. [10 entries, 1 absent.]

- 1820 I. (£10).—ALFRED TANNER, Shrewardine, Shrewsbury.
 1820 II. (£5).—RICHARD E. BIRCH, Bryn Eury, Colwyn Bay.
 1820 III. (£3).—EDWARD NOCK, Harrington Hall, Shifnal.
 1825 IV. (£2).—THOMAS S. MINTON, Montford, Shrewsbury.
 1821 R. N. & H. C.—KENNETH W. MILNES, Stanway Manor, Church Stretton.

Class 225.—Three Shropshire Shearling Ewes. [11 entries, 2 absent.]

- 1836 I. (£10), & 1937 III. (£3).—KENNETH W. MILNES, Stanway Manor, Church Stretton.
 1839 II. (£5).—ALFRED TANNER, Shrewardine, Shrewsbury.
 1838 R. N. & H. C.—THOMAS S. MINTON, Montford, Shrewsbury.

Class 226.—Three Shropshire Ewe Lambs. [8 entries, 2 absent.]

- 1841 I. (£10).—RICHARD E. BIRCH, Bryn Eury, Colwyn Bay.
 1845 II. (£5).—EDWARD NOCK, Harrington Hall, Shifnal.
 1847 III. (£3).—ALFRED TANNER, Shrewardine, Shrewsbury.
 1844 R. N. & H. C.—THOMAS S. MINTON, Montford, Shrewsbury.

Southdowns.

Class 227.—Southdown Two Shear Rams.¹ [12 entries, 1 absent.]

- 1832 I. (£10, & Champion.²)—C. R. W. ADEANE, Babraham Hall, Cambridge.
 1857 II. (£5).—SIR JEREMIAH COLMAN, BT., Gattton Park, Surrey
 1890 III. (£3).—DERMOT MCCALMONT, Newmarket.
 1858 R. N. & H. C.—F. H. JENNINGS, Cockfield Hall, Bury St. Edmunds.

Class 228.—Southdown Shearling Rams. [19 entries, 1 absent.]

- 1848 I. (£10, & R. N. for Champion.²)—W. M. CAZALET, Fairlawne, Tonbridge.
 1889 II. (£5).—SIR JEREMIAH COLMAN, BT., Gattton Park, Surrey.
 1879 III. (£3).—JAMES R. WEST, Alscol Park, Stratford-on-Avon
 1861 IV. (£2).—HIS MAJESTY THE KING, Sandringham.
 1875 R. N. & H. C.—DERMOT MCCALMONT, Crockford, Newmarket.

Class 229.—Three Southdown Shearling Rams.¹ [9 entries, none absent.]

- 1850 I. (£10), & 1855 II. (£5).—SIR JEREMIAH COLMAN, BT., Gattton Park, Surrey.
 1887 III. (£3).—FREDERICK H. JENNINGS, Cockfield Hall, Bury St. Edmunds.
 1881 R. N. & H. C. W. M. CAZALET, Fairlawne, Tonbridge.

Class 230.—Three Southdown Ram Lambs. [10 entries, 1 absent.]

- 1896 I. (£10).—DERMOT MCCALMONT, Crockford, Newmarket.
 1893 II. (£5).—SIR JEREMIAH COLMAN, BT., Gattton Park, Surrey.
 1895 III. (£3).—FREDERICK H. JENNINGS, Cockfield Hall, Bury St. Edmunds.
 1898 R. N. & H. C. JAMES R. WEST, Alscol Park, Stratford-on-Avon.

Class 231.—Three Southdown Shearling Ewes. [7 entries, 1 absent.]

- 1900 I. (£10, & Champion.¹)—HIS MAJESTY THE KING, Sandringham.
 1904 II. (£5).—FREDERICK H. JENNINGS, Cockfield Hall, Bury St. Edmunds.
 1902 III. (£3).—SIR JEREMIAH COLMAN, BT., Gattton Park, Surrey.
 1901 R. N. & H. C.—EARL CADOGAN, K.G., Cullford Hall, Bury St. Edmunds.

Class 232.—Three Southdown Ewe Lambs. [9 entries, 3 absent.]

- 1912 I. (£10, & R. N. for Champion.¹)—DERMOT MCCALMONT, Newmarket.
 1911 II. (£5).—FREDERICK H. JENNINGS, Cockfield Hall, Bury St. Edmunds.
 1909 III. (£3).—SIR JEREMIAH COLMAN, BT., Gattton Park, Surrey.
 1906 R. N. & H. C.—HIS MAJESTY THE KING, Sandringham.

¹ Prizes given by the Southdown Sheep Society.

² Champion Gold Medal given by the Southdown Sheep Society for the best Ram in Classes 227 and 228.

³ Silver Medal given by the Southdown Sheep Society for the best Pen of Ewes or Ewe Lambs in Classes 231 and 232.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Hampshire Downs.

Class 233.—Hampshire Down Two-Shear Rams.¹ [6 entries, 1 absent.]

- 1919 I. (£10.)—HENRY C. STEPHENS, Cholderton Lodge, Salisbury.
1916 II. (£5.) & 1917 R. N. & H. C.—CAPT J. A. MORRISON, Berwick House, Hindon, Salisbury.

Class 234.—Hampshire Down Shearling Rams. [16 entries, 2 absent.]

- 1923 I. (£10.)—ALFRED E. BLACKWELL, The Home Farm, Chipperfield, King's Langley, for Best Man.
1933 II. (£5.)—THE HON. MRS. PLEYDELL-BOUVERIE, Coleshill House, Highworth, Wilt.
1939 III. (£3.)—CAPT J. A. MORRISON, Berwick House, Hindon, Salisbury.
1921 R. N. & H. C.—J. EDWARD BAIGENT, Westend, Froyle, Alton, Hants.

Class 235.—Hampshire Down Ram Lambs. [20 entries, 1 absent.]

- 1953 I. (£10.¹ & Champion.²)—HENRY C. STEPHENS, Cholderton Lodge, Salisbury.
1947 II. (£5.¹)—CAPT. J. A. MORRISON, Berwick House, Hindon, Salisbury.
1938 III. (£3.¹)—ALFRED E. BLACKWELL, The Home Farm, Chipperfield, King's Langley.
1952 IV. (£2.¹)—THE HON. MRS. PLEYDELL-BOUVERIE, Coleshill House, Highworth, Wilt.
1949 V. (£2.)—DONALD NICOLL, Burntwood, Winchester.
1955 R. N. & H. C.—B. J. WATERS, Flimstone, Bishopstone, Salisbury

Class 236.—Three Hampshire Down Ram Lambs.
[15 entries, 4 absent.]

- 1966 I. (£10. & R. N. for Champion.²)—DONALD NICOLL, Burntwood, Winchester
1966 II. (£5.)—CAPT. J. A. MORRISON, Berwick House, Hindon, Salisbury.
1969 III. (£3.)—HENRY C. STEPHENS, Cholderton Lodge, Salisbury.
1971 IV. (£2.)—B. J. WATERS, Flimstone, Bishopstone, Salisbury.
1980 R. N. & H. C.—SIR GEORGE A. COOPER BT, Hursley Park, Winchester

Class 237.—Three Hampshire Down Ram Lambs (Novice).¹
[7 entries, 1 absent.]

- 1973 I. (£10.)—ERNEST ALBERT EDNEY, Five Heads Farm, Horndean, Hants.
1970 II. (£5.)—A. G. TROUP, Dogdean, Salisbury.
1978 III. (£3.)—J. G. WILLIAMS, Pendley Manor, Tring.
1972 IV. (£2.)—J. EDWARD BAIGENT, Westend, Froyle, Alton, Hants.
1977 R. N. & H. C.—G. CAINES WATERS, Burcombe Manor, Salisbury.

Class 238.—Three Hampshire Down Shearling Ewes. [8 entries, none absent.]

- 1979 I. (£10.) & 1981 R. N. & H. C.—J. EDWARD BAIGENT, Westend, Froyle, Alton.
1985 II. (£5.) & 1986 III. (£3.)—CAPTAIN J. A. MORRISON, Berwick House, Hindon, Salisbury.

Class 239.—Three Hampshire Down Ewe Lambs. [15 entries, 3 absent.]

- 2001 I. (£10.)—B. J. WATERS, Flimstone, Bishopstone, Salisbury.
1998 II. (£5.)—JOHN PAIN, Borough, Micheldever, Hants.
2000 III. (£3.)—HENRY C. STEPHENS, Cholderton Lodge, Salisbury.
1997 IV. (£2.)—DONALD NICOLL, Burntwood, Winchester.
1996 R. N. & H. C.—CAPTAIN J. A. MORRISON, Berwick House, Hindon, Salisbury.

Class 240.—Three Hampshire Down Ewe Lambs (Novice).¹
(7 entries, 2 absent.)

- 2007 I. (£10.)—G. CAINES WATERS, Burcombe Manor, Salisbury.
2006 II. (£5.)—A. G. TROUP, Dogdean, Salisbury.
2008 III. (£3.)—J. G. WILLIAMS, Pendley Manor, Tring.
2003 IV. (£2.)—ERNEST ALBERT EDNEY, Five Heads Farm, Horndean, Hants.
2002 R. N. & H. C.—J. EDWARD BAIGENT, Westend, Froyle, Alton, Hants.

Suffolks.

Class 241.—Suffolk Two-Shear Rams.² [2 entries.]

- 2009 I. (£10.) & 2010 II. (£5.)—HERBERT E. SMITH, The Grange, Walton, Suffolk.

¹ Prizes given by the Hampshire Down Sheep Breeders' Association.

² Champion Prize of £10 given by the Hampshire Down Sheep Breeders' Association for the best Ram Lamb, Pen of Ram Lambs or Ewe Lambs in Classes 235, 236, 237, 239, and 240.

³ Prizes given by the Suffolk Sheep Society.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 242.—Suffolk Shearling Rams. [3 entries.]

- 2012 I. (£10), & 2013 II. (£5).—HERBERT E. SMITH, The Grange, Walton, Suffolk.
2011 III. (£3).—S. R. SHERWOOD, Playford, Ipswich.

Class 243.—Suffolk Ram Lambs.¹ [4 entries, none absent.]

- 2016 I. (£10), & 2017 II. (£5).—HERBERT E. SMITH, The Grange, Walton, Suffolk.
2015 III. (£3).—S. R. SHERWOOD, Playford, Ipswich.

Class 244.—Three Suffolk Ram Lambs. [4 entries, none absent.]

- 2021 I. (£10).—HERBERT E. SMITH, The Grange, Walton, Suffolk.
2019 II. (£5).—W. F. PAUL, Kirton Lodge, Ipswich.
2020 III. (£3).—S. R. SHERWOOD, Playford, Ipswich.

Class 245.—Three Suffolk Shearling Ewes. [3 entries, 1 absent.]

- 2024 I. (£10), & 2023 II. (£5).—W. F. PAUL, Kirton Lodge, Ipswich.

Class 246.—Three Suffolk Ewe Lambs. [1 entries, 1 absent.]

- 2028 I. (£10).—HERBERT E. SMITH, The Grange, Walton, Suffolk.
2027 II. (£5).—S. R. SHERWOOD, Playford, Ipswich.
2026 III. (£3).—W. F. PAUL, Kirton Lodge, Ipswich.

Dorset Downs.²

Class 247.—Dorset Down Shearling Rams. [5 entries, none absent.]

- 2030 I. (£10), & 2029 II. (£5).—EDEN & WATSON, Milborne Wick, Sherborne, Dorset.
2032 R. N. & H. C.—RANDOLPH TORY, Charnsworth Manor, Whitechurch, Blandford, for Turnworth.

Class 248.—Three Dorset Down Ram Lambs. [5 entries, none absent.]

- 2034 I. (£10).—EDEN & WATSON, Milborne Wick, Sherborne, Dorset.
2038 II. (£5).—RANDOLPH TORY, Charnsworth Manor, Whitechurch, Blandford.
2036 R. N. & H. C.—G. C. WOOD HOMER, Bardolf Manor, Dorchester.

Class 249.—Three Dorset Down Shearling Ewes. [5 entries, 1 absent.]

- 2011 I. (£10).—G. C. WOOD HOMER, Bardolf Manor, Dorchester.
2039 II. (£5).—EDEN & WATSON, Milborne Wick, Sherborne, Dorset.
2043 R. N. & H. C.—RANDOLPH TORY, Charnsworth Manor, Whitechurch, Blandford,

Dorset Horn.³

Class 250.—Dorset Horn Shearling Rams, dropped after November 1, 1911. [8 entries, 2 absent.]

- 2047 I. (£10, & R. N. for Champion⁴).—FRANK J. MERSON & SON, Farringdon, North Petherton, Bridgwater.
2045 II. (£5).—SIR EVERARD HAMBRO, K.C.V.O., Milton Abbey, Blandford, for Delcombe No. 155.
2046 III. (£3).—ALFRED JOHNSON, Symondsburry, Bridport, Dorset, for Symondsburry No. 1.
2049 R. N. & H. C.—R. H. PALMER, West Stafford, Dorchester, for Flowers No. 310.

Class 251.—Three Dorset Horn Ram Lambs, dropped after November 1, 1912. [5 entries, none absent.]

- 2053 I. (£10).—FRANK J. MERSON & SON, Farringdon, North Petherton, Bridgwater.
2053 II. (£5).—SIR EVERARD HAMBRO, K.C.V.O., Milton Abbey, Blandford.
2054 III. (£3).—ALFRED JOHNSON, Symondsburry, Bridport, Dorset.
2056 R. N. & H. C.—R. H. PALMER, West Stafford, Dorchester.

Class 252.—Three Dorset Horn Shearling Ewes, dropped after November 1, 1911. [8 entries, none absent.]

- 2058 I. (£10, & Champion⁴), & 2057 III. (£3).—SIR EVERARD HAMBRO, K.C.V.O., Milton Abbey, Blandford.
2060 II. (£5).—FRANK J. MERSON & SON, Farringdon, North Petherton, Bridgwater.
2063 R. N. & H. C.—R. H. PALMER, West Stafford, Dorchester.

¹ Prizes given by the Suffolk Sheep Society.

² £15 towards these Prizes were given by the Dorset Down Sheep Breeders' Association.

³ £18 towards these Prizes were given by the Dorset Horn Sheep Breeders' Association.

⁴ Champion Silver Medal given by the Canadian Industrial Exhibition for the best exhibit of Dorset Horn Sheep in Classes 250-253.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 253.—Three Dorset Horn Ewe Lambs, dropped after November 1, 1912.

[6 entries, none absent.]

- 2067 I. (£10.)—SIR EVERARD HAMBRO, K.C.V.O., Milton Abbey, Blandford.
 2068 II. (£5.)—C. H. CRAWFORD, Mappercombe Farm, Powerstock, Melplash, Dorset.
 2070 III. (£3.)—R. H. PALMER, West Stafford, Dorchester, for ewe lambs, bred by William Reginald Flower, West Stafford.
 2068 R. N. & H. C.—ALFRED JOHNSON, Symondsburry, Bridport, Dorset.

Ryelands.¹

Class 254.—Ryeland Rams, Two-Shear and upwards. [2 entries.]

- 2071 I. (£10.)—HUGH A. CHRISTY, Llangoed Castle, Llyswen, Brecon, for ram, born in 1911.
 2072 II. (£5.)—F. E. GOUGH, The Moor, Bodenham, Leominster, for Bodenham First Lord, born in 1910.

Class 255.—Ryeland Shearling Rams. [5 entries, none absent.]

- 2076 I. (£10.)—F. E. GOUGH, The Moor, Bodenham, Leominster.
 2073 II. (£5.)—HUGH A. CHRISTY, Llangoed Castle, Llyswen, Brecon.
 2077 III. (£3.)—MRS. REGINALD HERBERT, Clytha Park, Abergavenny, for Clytha Model.
 2075 R. N. & H. C.—W. H. DAVIES, Claston, Dormington, Hereford, for Weston Engineer.

Class 256.—Three Ryeland Ram Lambs. [4 entries.]

- 2079 I. (£10.)—W. H. DAVIES, Claston, Dormington, Hereford.
 2081 II. (£5.)—MR. REGINALD HERBERT, Clytha Park, Abergavenny.
 2080 III. (£3.)—F. E. GOUGH, The Moor, Bodenham, Leominster.
 2078 R. N. & H. C.—HUGH A. CHRISTY, Llangoed Castle, Llyswen, Brecon.

Class 257.—Three Ryeland Shearling Ewes. [5 entries, 1 absent.]

- 2083 I. (£10.) & 2082 R. N. & H. C.—HUGH A. CHRISTY, Llangoed Castle, Llyswen.
 2085 II. (£5.)—F. E. GOUGH, The Moor, Bodenham, Leominster.
 2086 III. (£3.)—MRS. REGINALD HERBERT, Clytha Park, Abergavenny.

Kerry Hill (Wales).

Class 258.—Kerry Hill (Wales) Rams, Shearling and upwards.

[4 entries, 1 absent.]

- 2087 I. (£10.)—WILLIAM ALDERSON, Glanmehel, Kerry, Mont.
 2088 II. (£5.)—JOHN MURRAY NAYLOR, Leighton Hall, Welshpool, for Maesmawr Alderman 8898, born in 1910, bred by Tom Kinsey, Winsbury, Olrhbury, Salop.
 2090 R. N. & H. C.—THE DUKE OF WESTMINSTER, Eaton Hall, Chester.

Class 259.—Three Kerry Hill (Wales) Shearling Ewes.

[4 entries, none absent.]

- 2093 I. (£10.)—THE DUKE OF WESTMINSTER, Eaton Hall, Chester.
 2091 II. (£5.)—LORD HARLEIGH, Brogyntyn, Oswestry.
 2092 R. N. & H. C.—JOHN MURRAY NAYLOR, Leighton Hall, Welshpool.

Lincolns.²

Class 260.—Lincoln Two-Shear Rams. [8 entries, none absent.]

- 2099 I. (£10. & Champion.³)—HERBERT PEARS, Potterhanworth, Lincoln, for ram, bred by John Pears, Morn, Lincoln.
 2097 II. (£5.)—ROBERT DIXON, Bart's House, Brundesburton, Hull, for Riby Leonfield General 2nd 13083, bred by the late Henry Dudding, Riby Grove, Great Grimsby.
 2098 III. (£3.)—THE EXORS. OF THE LATE HENRY DUDDING, Riby Grove, Great Grimsby, for Kirmington Riby Gordon, bred by George Morris, Kirmington House, Brockleby.
 2102 R. N. & H. C.—R. & W. WRIGHT, Nocton Heath, Lincoln.

Class 261.—Lincoln Shearling Rams. [15 entries, 1 absent.]

- 2110 I. (£10. & Champion.³ & with 2142 Champion⁴), 2111 II. (£5.), & 2112 R. N. & H. C.—THE EXORS. OF THE LATE HENRY DUDDING, Riby Grove, Great Grimsby.
 2114 III. (£3.)—HERBERT PEARS, Potterhanworth, Lincoln, for ram, bred by John Pears, jun., Ellington, Horncastle.

¹ £24 towards these Prizes were given by the Ryeland Flock Book Society.

² £86 towards these Prizes were given by the Lincoln Long-Wool Sheep Breeders' Association.

³ Champion Prize of £5 given by the Lincoln Long-wool Sheep Breeders' Association for the best Ram in Classes 260 and 261.

⁴ Challenge Bowl given through the Lincoln Long-Wool Sheep Breeders' Association for the best group of one Ram and three Ewes, bred by Exhibitor, in Classes 260, 261, 264, and 266.

c *Award of Live Stock Prizes at Bristol, 1913.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 262.—Five Lincoln Shearling Rams. [12 entries, 1 absent.]

- 2127 I. (£15.)—HENRY SMITH, JUN., The Cottage, Cropwell Butler, Nottingham.
 2123 II. (£10.)—THE EXORS OF THE LATE HENRY DUDDING, Ruby Grove, Great Grimsby, for ram bred by the late Henry Dudding.
 2118 III. (£5.)—JOSEPH BROCKLEBANK, Carlton le Moorland, Newark.
 2121 IV. (£2.)—ROBERT DIXON, Barff House, Brandesburton, Hull.
 2120 R. N. & H. C.—J. H. DEAN & SONS, Heath House, Nocton, Lincoln.

Class 263.—Three Lincoln Ram Lambs. [10 entries, none absent.]

- 2139 I. (£10.)—R. & W. WRIGHT, Nocton Heath, Lincoln.
 2134 II. (£5.)—THE EXORS OF THE LATE HENRY DUDDING, Ruby Grove, Great Grimsby, for ram lambs bred by the late Henry Dudding.
 2131 III. (£3.) & 2130 R. N. & H. C.—J. H. DEAN & SONS, Heath House, Nocton, Lincoln.

Class 264.—Three Lincoln Shearling Ewes. [6 entries, 1 absent.]

- 2142 I. (£10.) & 2143 III. (£3.)—THE EXORS OF THE LATE HENRY DUDDING, Ruby Grove, Great Grimsby, for ewes bred by the late Henry Dudding.
 2141 II. (£5.)—ROBERT DIXON, Barff House, Brandesburton, Hull.
 2140 R. N. & H. C.—J. H. DEAN & SONS, Heath House, Nocton, Lincoln.

Class 265.—Three Lincoln Ewe Lambs. [11 entries, 3 absent.]

- 2156 I. (£10.)—R. & W. WRIGHT, Nocton Heath, Lincoln.
 2148 II. (£5.)—ROBERT DIXON, Barff House, Brandesburton, Hull.
 2147 III. (£3.)—J. H. DEAN & SONS, Heath House, Nocton, Lincoln.
 2151 R. N. & H. C.—THE EXORS OF THE LATE HENRY DUDDING, Ruby Grove, Great Grimsby, for ewe lambs bred by the late Henry Dudding.

Class 266.—Three Lincoln Yearling Ewes, in wool. [5 entries, 1 absent.]

- 2160 I. (£10.)—WILLIAM B. SWALLOW, Wootton Lawn, Ulceby.
 2157 II. (£5.)—J. H. DEAN & SONS, Heath House, Nocton, Lincoln.
 2161 III. (£3.)—W. H. WATSON, Temple Bruer, Lincoln.
 2159 R. N. & H. C.—THE EXORS OF THE LATE HENRY DUDDING, Ruby Grove, Great Grimsby.

Leicesters.¹

Class 267.—Leicester Shearling Rams. [10 entries, none absent.]

- 2163 I. (£10.) & 2164 II. (£5.)—GEORGE HARRISON, Gainford Hall, Darlington.
 2165 R. N. & H. C.—E. F. JORDAN, Eastburn, Driffield.

Class 268.—Three Leicester Ram Lambs. [3 entries.]

- 2173 I. (£10.)—GEORGE HARRISON, Gainford Hall, Darlington.
 2174 II. (£5.)—J. E. & C. H. SIMPSON, Pilmoor House, Humnanby, Yorks.
 2175 R. N. & H. C.—MRS. S. PERRY-HERRICK, Beau Manor Park, Loughborough.

Class 269.—Three Leicester Shearling Ewes. [1 entries, 1 absent.]

- 2175 I. (£10.)—E. F. JORDAN, Eastburn, Driffield.
 2178 II. (£5.)—J. E. & C. H. SIMPSON, Pilmoor House, Humnanby, Yorks.
 2177 R. N. & H. C.—MRS. S. PERRY-HERRICK, Beau Manor Park, Loughborough.

Class 270.—Three Leicester Ewe Lambs. [3 entries.]

- 2170 I. (£10.)—GEORGE HARRISON, Gainford Hall, Darlington.
 2181 II. (£5.)—J. E. & C. H. SIMPSON, Pilmoor House, Humnanby, Yorks.
 2180 R. N. & H. C.—MRS. S. PERRY-HERRICK, Beau Manor Park, Loughborough.

Border Leicesters.²

Class 271.—Border Leicester Rams, Two-Shear and upwards.

[5 entries, 1 absent.]

- 2185 I. (£10. & R. N. for Champion.)—R. G. MURRAY & SON, Spittal, Biggar, for Smallholm Model 2664, born in 1908 bred by Robert For-yth, New Smallholm, Kelso.
 2186 II. (£5.)—THE SCREMERSTON COAL CO., LTD., Heatherly Top, Scremerston, Berwick-on-Tweed, for Wild Sir Matthew 3153, born in 1911, bred by T. & M. Templeton, Sandy Knowe, Kelso.

¹ £15 towards these Prizes were given by the Leicester Sheep Breeders' Association.

² £18 towards these Prizes were given by the Society of Border Leicester Sheep Breeders.

³ Perpetual Challenge Cup given by the Society of Border Leicester Sheep Breeders for the best Ram or Ewe in Classes 271-273.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 2182 III. (£3.)—THE RT. HON. A. J. BALFOUR, M.P., Whittingeharne, Prestonkirk, for Mowhaugh 3104, born in 1911, bred by J. R. C. Smith, Galalaw.
2184 R. N. & H. O.—G. W. GILBANKS, Kempley, Morland, Penrith, for Barrelwell Hawk-rigg Stanley.

Class 272.—Border Leicester Shearling Rams. [12 entries, 2 absent.]

- 2190 I. (£10, & Champion.¹)—R. G. MURRAY & SON, Spittal, Biggar, N.B.
2191 II. (£5), & 2192 E. N. & H. O.—DAVID P. ELLIOT, Nisbet Hill, Duns.
2197 III. (£3.) THE SCREMERSTON COAL CO., LTD., Heathery Tops, Scremerston, Berwick-on-Tweed.

Class 273.—Border Leicester Shearling Ewes. [13 entries, 3 absent.]

- 2209 I. (£10.)—THE SCREMERSTON COAL CO., LTD., Heathery Tops, Scremerston, Berwick-on-Tweed.
2208 II. (£5.)—R. G. MURRAY & SON, Spittal, Biggar, N.B.
2204 III. (£3), & 2203 E. N. & H. O.—DAVID P. ELLIOT, Nisbet Hill, Duns.

Wensleydales.²

Class 274.—Wensleydale Rams, Two-Shear and upwards, entered or eligible for entry in the Wensleydale Blue-faced Flock Book. [4 entries.]

- 2215 I. (£10.)—THE EXORS. OF THE LATE THOMAS WILLIS, Carperby, Yorks., for Royal Conqueror, born in 1911, bred by Richard Procter, Barkerfield, Clitheroe
2214 II. (£5.)—JOHN W. GREENSIT, Holme-on-Swale, Thirsk, for Carperby Masterpiece, born in 1911, bred by the Exors. of the late Thomas Willis, Carperby, Yorks.
2212 III. (£3.)—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale, for Royal Bertie 1728, born in 1911, bred by W. Rhodes, Lundholme, Westhouse, Kirkby Lonsdale.
2213 E. N. & H. O.—LORD HENRY BENTINCK, M.P., for Underley Bertie 2nd.

Class 275.—Wensleydale Shearling Rams. [4 entries.]

- 2218 I. (£10.)—THE EXORS. OF THE LATE THOMAS WILLIS, Carperby, Yorks., for ram bred by Metcalfe Spensley, Castle Bank, Redmire, Yorks.
2216 II. (£5.)—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale, for Wild Prince.
2217 III. (£3.) JOHN W. GREENSIT, Holme-on-Swale, Thirsk, Yorks.
2219 E. N. & H. O.—THE EXORS. OF THE LATE THOMAS WILLIS.

Class 276.—Three Wensleydale Shearling Rams, entered or eligible for entry in the Wensleydale Blue-faced Flock Book. [4 entries, none absent.]

- 2223 I. (£10.)—THE EXORS. OF THE LATE THOMAS WILLIS, Carperby, Yorks.
2222 II. (£5.)—JOHN W. GREENSIT, Holme-on-Swale, Thirsk.
2220 III. (£3.)—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale,

Class 277.—Three Wensleydale Shearling Ewes. [5 entries, none absent.]

- 2224 I. (£10), & 2225 II. (£5.)—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale.
2223 III. (£3.)—THE EXORS. OF THE LATE THOMAS WILLIS, Carperby, Yorks.
2226 E. N. & H. O.—EDMUND WYATT GIBSON, Hestholm, Leyburn.

Lonks.³

Class 278.—Lonk Rams, Shearling and upwards. [3 entries, none absent.]

- 2230 I. (£10.)—EDWARD SMITH, Summerhouse Farm, Cowling, Crosshills, near Keighley, for Summerhouse Stamp 248, born in 1911, bred by David Hague, Copy Nook Hotel, Clitheroe.
2229 II. (£5.)—EDWARD SMITH, for Summerhouse Goalkeeper, born in 1912.

Class 279.—Three Lonk Shearling Ewes. [3 entries, none absent.]

- 2232 I. (£10) & 2233 II. (£5.)—EDWARD SMITH, Summerhouse Farm, Cowling, Crosshills, near Keighley.

¹ Perpetual Challenge Cup given by the Society of Border Leicester Sheep Breeders for the best Ram or Ewe in Classes 271-273.

² £18 towards these Prizes were given by the Wensleydale Blue-faced Sheep Breeders' Association and Flock Book Society.

³ £5 towards these Prizes were given by the Lonk Sheep Breeders' Association.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor"]

Derbyshire Gritstones.

Class 280.—*Derbyshire Gritstone Rams, Shearling and upwards.*

[3 entries, none absent.]

- 2237 I. (£10).—DANIEL C. WHEELTON, Lower Nabs, Wincle, Macclesfield, for Nabs Major, born in 1910
2235 R. N. & H. C.—THE EARL OF DERBY, Clough House, Wildboarclough, Macclesfield, for Hill House Harold.

Class 281.—*Three Derbyshire Gritstone Shearling Ewes.*

[3 entries, none absent]

- 2239 I. (£10). & 2240 R. N. & H. C.—DANIEL C. WHEELTON, Lower Nabs, Wincle, Macclesfield

Kent or Romney Marsh.¹

Class 282.—*Kent or Romney Marsh Two-Shear Rams.*

[14 entries, none absent.]

- 2250 I. (£10, & Champion.²)—ROBERT KENWARD, Udimore, Rye, Sussex, for Udimore No. 12 of 1911.
2254 II. (£5). & 2253 III. (£3).—J. EGERTON QUESTED, The Firs, Cheriton, Kent.
2249 IV. (£2).—A. J. HICKMAN, Court Lodge, Egerton, Kent.
2242 R. N. & H. C.—G. FOSTER CLARK, Boughton Mount, near Maidstone.

Class 283.—*Kent or Romney Marsh Shearling Rams.*

[29 entries, 2 absent.]

- 2280 I. (£10, & R. N. for Champion²), 2277 II. (£5), & 2279 III. (£3).—J. EGERTON QUESTED, The Firs, Cheriton, Kent.
2281 IV. (£2).—L. H. & G. W. FINN, Westwood Court, Faversham, Kent
2281 R. N. & H. C.—WILLIAM RENDALL, Monks Horton, Hythe, Kent.

Class 284.—*Five Kent or Romney Marsh Shearling Rams.*

[11 entries, 2 absent.]

- 2293 I. (£15).—J. EGERTON QUESTED, The Firs, Cheriton, Kent.
2287 II. (£10).—L. H. & G. W. FINN, Westwood Court, Faversham, Kent
2286 III. (£5).—GEORGE FARMER, Leeds Abbey, Maidstone.
2288 IV. (£2).—O. F. GUNTHER, Tongewood, Inwikhurst, Kent.
2289 R. N. & H. C.—A. J. HICKMAN, Court Lodge, Egerton, Kent

Class 285.—*Three Kent or Romney Marsh Ram Lambs.*

[12 entries, 1 absent.]

- 2303 I. (£10).—SYDNEY WILLIAM MILLEN, Syndale Valley, Faversham, Kent.
2298 II. (£5).—L. H. & G. W. FINN, Westwood Court, Faversham, Kent.
2304 III. (£3).—FREDERICK NEAME, Macknade, Faversham, Kent.
2295 IV. (£2).—W. M. CAZALET, Fairlawne, Tonbridge.
2297 R. N. & H. C.—SIR HENRY R. DERING, Bt., Surrenden-Derning, Muckley, Kent

Class 286.—*Three Kent or Romney Marsh Shearling Ewes.*

[12 entries, 2 absent.]

- 2317 I. (£10), & 2316 III. (£3).—J. EGERTON QUESTED, The Firs, Cheriton, Kent.
2310 II. (£5).—GEORGE FARMER, Leeds Abbey, Maidstone.
2315 R. N. & H. C.—FREDERICK NEAME, Macknade, Faversham, Kent.

Class 287.—*Three Kent or Romney Marsh Ewe Lambs.*

[9 entries, none absent.]

- 2320 I. (£10).—G. FOSTER CLARK, Boughton Mount, Maidstone.
2325 II. (£5).—FREDERICK NEAME, Macknade, Faversham, Kent.
2323 III. (£3).—A. J. HICKMAN, Court Lodge, Egerton, Kent.
2319 R. N. & H. C.—W. M. CAZALET, Fairlawne, Tonbridge.

¹ £48 towards these Prizes were given by the Kent or Romney Marsh Sheep Breeders' Association.

² Champion Prize of £10 10s. given by the Kent or Romney Marsh Sheep Breeders' Association for the best Ram in Classes 282 and 283.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Cotswolds.¹

Class 288.—Cotswold Shearling Rams. [7 entries, none absent.]

2328 I. (£10), 2330 III. (£3), & 2329 R. N. & H. C.—W. T. GARNE & SON, Aldsworth, Northleach, Glos.

2332 II. (£5).—WILLIAM HOULTON, Broadfield Farm, Northleach, Glos.

Class 289.—Three Cotswold Ram Lambs. [4 entries.]

2335 I. (£10), & 2336 II. (£5).—W. T. GARNE & SON, Aldsworth, Northleach, Glos.

2337 III. (£3), & 2338 R. N. & H. C.—RUSSELL SWANWICK, Royal Agricultural College Farm, Cirencester.

Class 290.—Three Cotswold Shearling Ewes. [9 entries, none absent.]

2342 I. (£10), & 2343 R. N. & H. C.—WILLIAM HOULTON, Broadfield Farm, Northleach, Glos.

2339 II. (£5), & 2340 III. (£3).—W. T. GARNE & SON, Aldsworth, Northleach, Glos.

Class 291.—Three Cotswold Ewe Lambs. [4 entries.]

2349 I. (£10), & 2348 II. (£5).—W. T. GARNE & SON, Aldsworth, Northleach, Glos.

2350 III. (£3), & 2351 R. N. & H. C.—RUSSELL SWANWICK, Royal Agricultural College Farm, Cirencester.

Devon Long-Wools.²

Class 292.—Devon Long-Wool Rams, Two-Shear and upwards.

[3 entries.]

2352 I. (£10), & 2353 R. N. & H. C.—ROBERT COOK, Crazelowman, Tiverton, for rams born in 1911.

2354 II. (£5).—FREDERICK WHITE, Torweston, Williton, Somerset, for Torweston Majestic, born in 1911.

Class 293.—Devon Long-Wool Shearling Rams. [5 entries, none absent.]

2357 I. (£10).—FREDERICK WHITE, Torweston, Williton, Somerset.

2356 II. (£5), & 2355 R. N. & H. C.—ROBERT COOK, Crazelowman, Tiverton.

Class 294.—Three Devon Long-Wool Shearling Ewes. [2 entries.]

2361 I. (£10).—FREDERICK WHITE, Torweston, Williton, Somerset.

2360 II. (£5).—ROBERT COOK, Crazelowman, Tiverton.

South Devons.

Class 295.—South Devon Two-Shear Rams. [4 entries, 1 absent.]

2362 I. (£10).—EDWARD H. HOSKIN, Cartuther Barton, Liskeard, Cornwall.

2364 II. (£5).—JOHN STOOKE, Sherford, Brixton, Plymouth, for ram bred by W. S. Edwards, Upphemston, Totnes.

2365 R. N. & H. C.—R. B. TRANT, Tregill, Menheniot, Cornwall.

Class 296.—South Devon Shearling Rams. [6 entries, 1 absent.]

2366 I. (£10).—PHILIP GEORGE BROWN, Tremadart Barton, Duloe, Cornwall, for Tremadart.

2367 II. (£5).—JOHN S. HALLETT, Sherford, Brixton, Plymouth.

2370 R. N. & H. C.—JOHN STOOKE, Sherford, Brixton, Plymouth.

Class 297.—Three South Devon Ram Lambs. [5 entries, 1 absent.]

2373 I. (£10).—JOHN S. HALLETT, Sherford, Brixton, Plymouth.

2376 II. (£5).—R. B. TRANT, Tregill, Menheniot, Liskeard.

2372 R. N. & H. C.—PHILIP GEORGE BROWN, Tremadart Barton, Duloe, Cornwall.

Class 298.—Three South Devon Shearling Ewes. [4 entries, 2 absent.]

2380 I. (£10).—JOHN S. HALLETT, Sherford, Brixton, Plymouth.

2378 II. (£5).—PHILIP GEORGE BROWN, Tremadart Barton, Duloe, Cornwall.

Class 299.—Three South Devon Ewe Lambs. [4 entries, none absent.]

2381 I. (£10).—JOHN S. HALLETT, Sherford, Brixton, Plymouth.

2384 II. (£5).—R. B. TRANT, Tregill, Menheniot, Liskeard.

¹ £18 towards these Prizes were given by the Cotswold Sheep Society.

² £15 towards these Prizes were given by the Devon Long-Woolled Sheep Breeders' Society.

³ £30 towards these Prizes were given by the South Devon Flock Book Association.

civ *Award of Live Stock Prizes at Bristol, 1913.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Dartmoors.¹

Class 300.—*Dartmoor Rams, Two-Shear and upwards* [1 entries, 1 absent.]

2388 I. (£10).—ROBERT RYALL, Beera, Sydenham Damuel, Tavistock, for Lake General, born in 1910 bred by J. Spry, Lamerton, Tavistock

2387 II. (£5).—HENRY NORTHEY, Lake, Lifton, Devon, for Markstone General, born in 1911, bred by G. L. Hanns, Markstone, Lifton

Class 301.—*Dartmoor Shearling Rams.* [10 entries, 5 absent.]

2392 I. (£10).—W. A. JOHNS AND SONS, Cleave, Kelly, Lifton, Devon, for Cleave No 121.

2393 II. (£5).—W. A. JOHNS AND SONS, for Cleave No 122.

2394 III. (£3).—HENRY J. KINGWELL, Great Aish, South Brent, Devon, for ram, bred by Messrs. Kingwell, Great Aish.

Class 302.—*Three Dartmoor Shearling Ewes* [3 entries, none absent.]

2400 I. (£10).—WILLIAM ROWSE, Okehampton, Devon

2399 II. (£5).—FREDERICK JEFFERY, Park Hill Stud Farm, Ipplepen, Newton Abbot

Exmoors.²

Class 303.—*Exmoor Rams, Two-Shear and upwards* [3 entries]

2402 I. (£10).—PERCY SMYTH, Broford, Dulverton, Somerset, for Broford Model 401, born in 1910

2403 II. (£5).—PERCY SMYTH, for Nadrid No. 11 459, born in 1911, bred by Fred M. Yendall, Nadrid, South Molton.

2404 III. (£3).—D. J. TAPP, Highercombe, Dulverton, for ram, born in 1911, bred by Percy Smyth, Broford, Dulverton

Class 304.—*Exmoor Shearling Rams* [3 entries]

2407 I. (£10).—H. K. LETHBRIDGE, Wood, South Tawton, Okehampton, for ram, bred by the late William Lethbridge.

2406 II. (£5).—D. J. TAPP, Highercombe, Dulverton, Somerset.

2405 III. (£3).—PERCY SMYTH, Broford, Dulverton, Somerset.

Class 305.—*Three Exmoor Shearling Ewes* [2 entries]

2409 I. (£10).—D. J. TAPP, Highercombe, Dulverton, Somerset

2408 II. (£5).—H. K. LETHBRIDGE, Wood, South Tawton, Okehampton for ewes, bred by the late William Lethbridge.

Cheviots.³

Class 306.—*Cheviot Rams, Two-Shear and upwards.* [1 entries.]

2410 I. (£10), & 2411 II. (£5).—JACOB ROBSON, Byrness, Otterburn, for rams, born in 1911.

2412 III. (£3), & 2413 R. N. & H. C.—JOHN ROBSON, Newton, Bellingham, for rams, born in 1912.

Class 307.—*Cheviot Shearling Rams.* [1 entries.]

2416 I. (£10), & 2417 II. (£5).—JOHN ROBSON, Newton Bellingham.

2414 III. (£3), & 2415 R. N. & H. C.—JACOB ROBSON, Byrness, Otterburn.

Class 308.—*Cheviot Shearling Ewes.* [4 entries.]

2420 I. (£10), & 2421 R. N. & H. C.—JOHN ROBSON, Newton, Bellingham.

2418 II. (£5), & 2419 III. (£3).—JACOB ROBSON, Byrness, Otterburn

Herdwicks.

Class 309.—*Herdwick Rams, Shearling and upwards.*

[4 entries, 1 absent.]

2425 I. (£10).—S. D. STANLEY DODGSON, Tarnbank, Cockermouth, for ram, born in 1908, bred by John Rothery, Wadsdale Head Hall, Gosforth, Cumberland.

2424 II. (£5).—THE EARL OF LONSDALE, Whitehaven Castle, Cumberland, for ram, born in 1912.

2423 R. N. & H. C.—THE EARL OF LONSDALE, for ram, born in 1909

Class 310.—*Three Herdwick Shearling Ewes.* [3 entries, 1 absent.]

2428 I. (£10), & 2427 R. N. & H. C.—THE EARL OF LONSDALE, Whitehaven Castle, Cumberland.

¹ £15 towards these Prizes were given by the Dartmoor Sheep Breeders' Association.

² £18 towards these Prizes were given by the Exmoor Horn Sheep Breeders' Society.

³ £16 towards these Prizes were given by Breeders of Cheviot Sheep.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Welsh Mountain.

Class 311.—*Welsh Mountain Rams, Shearling and upwards.*

[9 entries, 3 absent.]

- 2429 I. (£10).—ROBERT ELLIS, Llantysilio Farm, Llangollen, for Tysilio CI, born in 1910, bred by Thomas Jones, Hafodwen, Llanfihangel.
 2434 II. (£5).—W. G. ROBERTS, Dyserth Hall, Flintshire, for ram, born in 1911.
 2436 III. (£3).—JOHN C. WYNNE-FINCH, Voelas, Bettws-y-coed, for Voelas Gwylm, born in 1910, bred by Mrs. M. E. Wynne-Finch.
 2439 R. N. & H. C.—JOHN GRIFFITHS GRATTON, Foryd Farm, Abergale.

Class 312.—*Three Welsh Mountain Shearling Ewes.* [9 entries, 1 absent.]

- 2438 I. (£10).—H. O. ELLIS, Tynhendre, Bangor.
 2445 II. (£5).—A. ROMER WYNN, Rûg, Corwen.
 2441 III. (£3).—JOSEPH LLEWELYN GRATTON, Fron Haul Farm, Dyserth Road, Rhyl.
 2439 R. N. & H. C.—ROBERT ELLIS, Llantysilio Farm, Llangollen.

Black-faced Mountain.

Class 313.—*Black-faced Mountain Rams, Shearling and upwards.*

[7 entries, none absent.]

- 2453 I. (£10).—PHILIP SOWERBY, Bank Hall, Newbiggin, Carlisle, for Tighnablair, born in 1911, bred by Peter McIntyre, Tighnablair, Comrie.
 2550 II. (£5).—JOHN DARGUE, Burnside Hall, Kendal, for Bonnie Scotland, born in 1911.
 2447 R. N. & H. C.—WALTER N. COCHRANE, St. John's Chapel, Weardale, for Patrick.

Class 314.—*Black-faced Mountain Shearling Ewes.* [5 entries, none absent.]

- 2455 I. (£10).—WALTER N. COCHRANE, St. John's Chapel, Weardale.
 2457 II. (£5).—PHILIP SOWERBY, Bank Hall, Newbiggin, Carlisle, for Lady Ardale.
 2458 R. N. & H. C.—PHILIP SOWERBY, for The Countess.

PIGS.

Large Whites.

Class 315.—*Large White Boars, farrowed in 1909, 1910, or 1911.*

[14 entries, none absent.]

- 2463 (£10, & Champion.)—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for Worsley Turk 28th 15531, born July 17, 1910, bred by the Earl of Ellesmere, Worsley Hall, Manchester; s. Turk of Worsley 12833, d. Worsley Marchington Queen 2nd 20650 by Worsley Turk 4th 11217.
 2462 II. (£5).—J. MARMIAL DUGDALE, Liwyn, Llanfyllin, Montgomeryshire, for Liwyn Turk 15039, born Jan. 4, 1911; s. Worsley Turk 25th 15529, d. Liwyn Sunlight 32482 by Hero of Liwyn 12565.
 2472 III. (£3).—ALFRED W. WHITE, Hillegom, Spalding, for Wonder 2nd 15459, born Nov. 2, 1910, bred by R. E. W. Stephenson, Tue Brook, Liverpool; s. Spalding Wonder 12795, d. Osarina 2nd of West Derby 28184 by Holywell Czech 8007.
 2464 IV. (£2).—SIR GILBERT GREENALL, BT., C.V.O., for Worsley Turk 30th 15535, born July 17, 1910, bred by the Earl of Ellesmere, Worsley Hall, Manchester; s. Turk of Worsley 12833, d. Worsley Marchington Queen 2nd 20650 by Worsley Turk 4th 11217.
 2450 R. N. & H. C.—J. BICKLEY, Welsbampton, Salop, for Fenton Ringmaster.

Class 316.—*Large White Boars, farrowed in 1912, before July 1.*

[8 entries, 1 absent.]

- 2475 I. (£10, & R. N. for Champion.)—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for Jay of Worsley 12th 18143, born Jan. 7, bred by Daniel B. Daybell, Bottesford, Nottingham; s. Mollington Jay of Bottesford 10983, d. Buttercup of Bottesford 24808 by Radium 11017.
 2477 II. (£5).—SIR GILBERT GREENALL, BT., C.V.O., for Worsley Turk 51st 18621, born Jan. 2, bred by the Earl of Ellesmere, Worsley Hall, Manchester; s. Worsley Turk 30th 15535, d. Worsley Miss 18th 30336 by Worsley Turk 4th 11217.

¹ Champion Gold Medal given by the National Pig Breeders' Association for the best Boar in Classes 315-318.

cvi *Award of Live Stock Prizes at Bristol, 1913.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor"]

2476 III. (£3.)—SIR GILBERT GREENALL, BT., C.V.O., for Jay of Worsley 14th 16147, born Jan. 6, bred by Daniel R. Daybell, Bottesford, Nottingham; s. Mollington Jay of Bottesford 10965, d. Bottesford Empress 6th 20496 by Ruddington Roger of Bottesford 10083

2474 R. N. & H. C.—JOSEPH DARLINGTON, Stanwardine Farm, Burlton, Shrewsbury, for Stanwardine Jay.

Class 317.—*Large White Boars, farrowed in 1912, on or after July 1*

[13 entries, 3 absent.]

2492 I. (£10.)—EDMUND WHERRY, Bourne, Lincs., for Bourne Banner 20th, born July 11, bred by W. H. & E. Wherry, Bourne; s. Bourne Banner 5th 15947, d. Bourne Bramble 27700 by Giant Goliath 9885

2492 II. (£5.)—SIR GILBERT GREENALL, BT., C.V.O. Walton Hall, Warrington, for Worsley Jay 16th, born July 11, bred by the Earl of Ellesmere, Worsley Hall, Manchester; s. Worsley Jay 3rd 16551, d. Worsley Empress 40th 30286 by Worsley Monarch 25th 11193

2494 III. (£3.)—SIR GILBERT GREENALL, BT., C.V.O., for Worsley Monarch 53rd, born July 11, bred by the Earl of Ellesmere, Worsley Hall, Manchester; s. Worsley Monarch 46th 15499, d. Worsley Empress 16th 23804 by Roger 7203.

2493 R. N. & H. C.—SIR GILBERT GREENALL, BT., C.V.O., for Worsley Monarch 52nd.

Class 318.—*Large White Boars, farrowed in 1913.* [35 entries, 2 absent.]

2504 I. (£10.)—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for boar, born Jan. 1, bred by the Earl of Ellesmere, Worsley Hall, Manchester; s. Banner of Worsley 1st 15893, d. Worsley Duchess 32nd 33616 by Emperor of Worsley 10791.

2507 II. (£5.)—ROWLAND P. HAYNES, Red House Farm, Caidmore, Wilkall, for boar, born Jan. 4, bred by Stephen Willson, Peterborough; s. West Derby Herdsman 15th 16443, d. Forest Silverleaf 28412 by Holywell Forest Ranger 13081.

2498 III. (£3.) & 2499 R. N. & H. C.—DANIEL R. DAYBELL, Bottesford, Nottingham, for boar, born Jan. 6; s. Mollington Jay of Bottesford 10965, d. Buttercup of Bottesford 24808 by Radium 11017.

2528 IV. (£2.)—ALFRED W. WHITE, Hillegom, Spalding, Lincs., for boar, born Jan. 1; s. Wonder 2nd 15459, d. Miss Shennstone of Spalding 29114 by Emperor of Shennstone 13585.

Class 319.—*Large White Breeding Sows, farrowed in 1909, 1910, or 1911.*

[17 entries, 5 absent.]

2541 I. (£10, & Champion.)—JOHN & ROBERT PURVIS, The Rookery, Wyboston, St. Neots, for Wyboston Amy 33753, born Jan. 2, 1911, farrowed Jan. 2; s. Swynford of Wyboston 14037, d. Wyboston Ada 26692 by Peterboro' City 10987.

2544 II. (£5.)—R. E. W. STEPHENSON, The Brook, Liverpool, for Tallington Companion 29914, born Jan. 10, 1909, farrowed Feb. 9, bred by W. E. Measures, Tallington, Stamford; s. Ruddington Right Stamp 8717, d. Tallington Carnation 1st 21716 by Worsley Monarch 19th 9371.

2537 III. (£3.)—J. I. MAJOR, Whyte House, Ramsey, Hunts., for Perfectus 29176, born July 21, 1909, farrowed Jan. 24, bred by Nottingham Corporation Farm Commission, Stoke Bardolph, Nottingham; s. Lafayette 11777, d. Bottesford Perfection 9th 18132 by Bottesford Combination 6043.

2534 R. N. & H. C.—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for Worsley Empress 37th.

Class 320.—*Large White Sows, farrowed in 1912, before July 1.*

[12 entries, 1 absent.]

2556 I. (£10, & R. N. for Champion.)—R. E. W. STEPHENSON, The Brook, Liverpool, for West Derby Choice Lass 8th 36288, born Jan. 1; s. West Derby Herdsman 6th 14203, d. Nottingham Choice Lass 4th 35810 by Fulwood Longfellow 9121.

2547 II. (£5.)—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for Worsley Lady 7th, 36550, born January 10, bred by the Earl of Ellesmere, Worsley Hall, Manchester; s. Worsley Turk 18th 14323, d. Ladylike of Worsley 3rd 28816 by Bouncing Boy of Nottingham 10837.

2552 III. (£3.)—JOHN & ROBERT PURVIS, The Rookery, Wyboston, St. Neots, for Wyboston Anona 36624, born Jan. 1; s. Wyboston Bonnie Boy 12025, d. Molly of Wyboston 25852 by Marshall Baron Fulwood 9971.

2553 R. N. & H. C.—JOHN & ROBERT PURVIS, for Wyboston Bramble.

Class 321.—*Large White Sows, farrowed in 1912, on or after July 1.*

[24 entries, 10 absent.]

2580 I. (£10.)—EDMUND WHERRY, Bourne, Lincs., for Bourne Bramble 20th, born July 11, bred by W. H. & E. Wherry; s. Bourne Banner 5th 15947, d. Bourne Bramble 27700 by Giant Goliath 9885.

¹ Prizes offered by the National Pig Breeders Association.

² Champion Gold Medal given by the National Pig Breeders' Association for the best Sow in Classes 319 to 321.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 2581 II. (£5.)—EDMUND WHERRY, for Bourne Bramble 23rd, born July 11; s. Bourne Banner 5th 15947, d. Bourne Bramble 27700 by Giant Gohath 9867.
 2582 III. (£3.)—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for Worsley Empress 78th, bred by the Earl of Ellesmere Worsley Hall, Manchester; s. Worsley Jay 3rd 18551, d. Empress of Worsley 23774 by Worsley Roger 16th 10231.
 2580 R. N. & H. C.—JOHN FILLINGHAM, George Hotel, Grantham

Class 322.—Three Large White Sows, farrowed in 1913.

[12 entries, none absent.]

- 2583 I. (£10.), & 2584 II. (£5.)—DANIEL R. DAYBELL, Bottesford, Nottingham, for sows, born Jan. 6; s. Mollington Jay of Bottesford 10985, d. Buttercup of Bottesford 24808 by Radium 11017.
 2593 III. (£3.)—ALFRED W. WHITE, Hillegom, Spalding, for sows born Jan. 1 and 7; s. Wonder 2nd 15459, ds. Miss Shenstone of Spalding 29114 by Emperor of Shenstone 13585 and Nottingham Choice Lams 4th 25810 by Fulwood Longfellow 9121.
 2586 R. N. & H. C.—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington.

Middle Whites.

Class 323.—Middle White Boars, farrowed in 1909, 1910, or 1911.

[8 entries, 2 absent.]

- 2598 I. (£10. & Champion.¹)—LEOPOLD C. PAGET, Middlethorpe Hall, York, for Banker of Castlecroft 12995, born Jan. 8, 1909, bred by R. S. Sadler, The Leasowes, Sutton Coldfield; s. Wharfedale Bard 12111, d. Castlecroft Brilliant 21936 by Castlecroft Sir Gilbert 9403.
 2600 II. (£5. & R. N. for Champion.¹)—CHARLES SPENCER, Holywell Manor, St. Ives, for Sefton of Holywell 14465, born Jan. 14, 1910, bred by the Earl of Sefton, Croxteth Hall, Liverpool; s. Tarbock Clumber 12101, d. Tarbock Patnie 20th 22098 by Walton Turret 12th 9453.
 2596 III. (£3.)—W. B. HILL, Underhill Farm, Wolverhampton, for Prestwood David 15603, born Jan. 7, 1911; s. Prestwood John, junior 14439, d. Prestwood Rose 3rd 34190 by Wharfedale Bard 12111.
 2601 R. N. & H. C.—THOMAS WILLOOCK, Dunham Mount, Bowdon, Cheshire, for Manchester of Walton.

Class 324.—Middle White Boars, farrowed in 1912.²

[7 entries, none absent.]

- 2603 I. (£10.)—W. B. HILL, Underhill Farm, Wolverhampton, for Prestwood David 2nd, born Jan. 5; s. Prestwood David 15603, d. Prestwood Pearl 34194 by Holywell Vicar 3rd 12073.
 2607 II. (£5.)—THE EXORS. OF THE LATE A. C. TWENTYMAN, Castlecroft, Wolverhampton, for Castlecroft Scorch 18705, born Jan. 29; s. Lynn Motorist 12070, d. Castlecroft Finch 38894 by Albert of Castlecroft 11218.
 2602 III. (£3.)—W. H. CARTER, Moss Hall, Carrington, Manchester, for Croxteth Reveller 8th, born July 31, bred by Earl of Sefton, Croxteth Hall, Liverpool; s. Reveller of Croxteth 15873, d. Croxteth Rose 15th 34030 by Dunford Dulce 7th 15617.
 2605 R. N. & H. C.—LEOPOLD C. PAGET, Middlethorpe Hall, York, for Epicure of Wharfedale.

Class 325.—Middle White Boars, farrowed in 1913.

[18 entries, 1 absent.]

- 2619 I. (£10.)—THE EARL OF SEFTON, Croxteth Hall, Liverpool, for boar, born Jan. 9; s. Reveller of Croxteth 15873, d. Rose of Tarbock 10th 30923 by Tarbock Prince 12108.
 2611 II. (£5.)—W. B. HILL, Underhill Farm, Wolverhampton, for boar, born Jan. 3; s. Prestwood Coronation 15659, d. Prestwood Madge 34193 by Holywell Vicar 3rd 12073.
 2617 III. (£3.)—LEOPOLD C. PAGET, Middlethorpe Hall, York, for boar, born Jan. 10; s. Wharfedale Valentine 15717, d. Wharfedale Debit 34336 by Banker of Castlecroft 12995.
 2614 R. N. & H. C.—LEOPOLD C. PAGET, Middlethorpe Hall, York.

Class 326.—Middle White Breeding Sows, farrowed in 1909, 1910, or 1911.

[8 entries, none absent.]

- 2632 I. (£10. & Champion.³)—CHARLES SPENCER, Holywell Manor, St. Ives, for Holywell Perfection 38944, born Jan. 22, 1911, farrowed Feb. 9; s. Sefton of Holywell 14465, d. Holywell Rosella 2nd 24094 by Holywell Rosario 8857.

¹ Champion Gold Medal given by the National Pig Breeders' Association for the best Boar in Classes 323-325.

² Prizes given by the National Pig Breeders' Association.

³ Champion Gold Medal given by the National Pig Breeders' Association for the best Sow in Classes 326 and 327.

cviil *Award of Live Stock Prizes at Bristol, 1913.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

2630 II. (£5.)—LEOPOLD C. PAGET, Middlethorpe Hall, York, for Wharfedale Joyful 31056, born Feb. 21, 1910, farrowed Mar. 14; s. Wharfedale Reveller 11329 d. Pendley Queen 1st 24138 by First Choice of Pendley 10277.

2631 III. (£3.)—LEOPOLD C. PAGET, for Wharfedale Boom 24312, born Mar. 1, 1911, farrowed Jan. 12; s. Tarbock Turret 2nd 11313, d. Vulcane of Wharfedale 27170 by Wharfedale Vulcan 11333.

2631 R. N. & H. C.—THE EARL OF SEFTON, Croxteth Hall, Liverpool, for Tarbock Pattie 65th.

Class 327.—Middle White Sows, farrowed in 1912. [12 entries, none absent.]

2639 I. (£10, & R. N. for Champion.¹)—W. B. HILL, Underhill Farm, Wolverhampton, for Prestwood Mary 36972, born Jan. 8; s. Prestwood Bugler 11451, d. Holywell Gloucester 30818 by Castlecroft Rufus 12045.

2638 II. (£5.)—W. B. HILL, for Alberta of Prestwood 36722, born Jan. 13, bred by J. Eastman, Heath Town, Wolverhampton; s. Abbot of Prestwood 16691, d. Prestwood Alberta 2nd 30968 by Albert of Castlecroft 11219.

2644 III. (£3.)—THE EARL OF SEFTON, Croxteth Hall, Liverpool, for Croxteth Pattie 24th 38804, born Jan. 4; s. Reveller of Croxteth 15673, d. Tarbock Pattie 17th 30070 by Tarbock Clumber 12101.

2643 R. N. & H. C.—GEORGE PIMLOTT, Queen's Buildings, Altrincham

Class 328.—Three Middle White Sows, farrowed in 1913.

[9 entries, none absent.]

2650 I. (£10.)—LEOPOLD C. PAGET, Middlethorpe Hall, York, for sows, born Jan. 9, bred by the Earl of Sefton, Croxteth Hall, Liverpool; s. Reveller of Croxteth 15673, d. Tarbock Rose 10th 30922 by Tarbock Prince 12103.

2654 II. (£5.)—THE EXORS OF THE LATE A. C. TWENTYMAN, Castlecroft, Wolverhampton, for sows, born Jan. 13; s. Wharfedale Hal 16817, d. Castlecroft Butones 2nd 30623 by Wharfedale Bard 12111.

2651 III. (£3.)—THE EARL OF SEFTON, Croxteth Hall, Liverpool, for sows, born Jan. 3; s. Reveller of Croxteth 15673, d. Croxteth Pattie 7th 33974 by Banker of Castlecroft 12995.

2647 R. N. & H. C.—H. R. BRETON, Hammonds, Cheekendon, Reading

Tamworths.

Class 329.—Tamworth Boars, farrowed in 1909, 1910, or 1911.

[4 entries.]

2656 I. (£10, & Champion.²)—CHARLES L. COXON, Webton Court, Madley, Hereford, for Bishop of Webton 15741, born Jan. 18, 1911, bred by Sir Peter Walker, Bart., Osmaston Manor, Derby; s. Elford Bishop 13175, d. Arabis of Osmaston 27222 by Rufus of Osmaston 11435.

2659 II. (£5.)—SIR PETER WALKER, BT, Osmaston Manor, Derby, for Elford Bishop 13175, born Jan. 27, 1909, bred by Charles L. Coxon, Webton Court, Madley; s. Bishop of Knowle 11337, d. Middleton Manfreda 24350 by Middleton Matron 10429.

2657 III. (£3.)—EGBERT DE HAMEL, Middleton Hall, Tamworth, for Middleton Milan 15903, born July 21, 1910; s. Mason of Middleton 13217, d. Middleton Merker 31222 by Gay Lad of Middleton 12181.

2658 R. N. & H. C.—EGBERT DE HAMEL, for Middleton Milo.

Class 330.—Tamworth Boars, farrowed in 1912.³ [1 entries.]

2663 I. (£10, & R. N. for Champion.²)—D. W. PHILIP, The Redlands, Whitnash, Birmingham, for Whitnash Enterprise, born Jan. 5; s. Duke of Whitnash 15773, d. Cholderton Golden Beauty 2nd 34480 by Duke of Gloucester 12177.

2660 II. (£5.)—W. H. MITCHELL, Elmdene, Kenilworth, for Elmdene Aaron 16803, born July 12; s. Ledbury of Elmdene 15799, d. Elmdene Matron 7th 31140 by Knowle Nestor 10429.

2661 III. (£3.)—W. H. MITCHELL, for Elmdene Abel 16805, born July 12; s. Ledbury of Elmdene 15799, d. Elmdene Matron 7th 31140 by Knowle Nestor 10429.

2662 R. N. & H. C.—D. W. PHILIP, for Sir Robert.

Class 331.—Tamworth Boars, farrowed in 1913. [11 entries, none absent.]

2667 I. (£10.)—W. H. MITCHELL, Elmdene, Kenilworth, for boar, born Jan. 10; s. Elmdene Dandy 18903, d. Elmdene Matron 7th 31140 by Knowle Nestor 10429.

2665 II. (£5.)—CHARLES L. COXON, Webton Court, Madley, Hereford, for Webton Bishop 2nd, born Jan. 10; s. Bishop of Webton 15741, d. Cherry of Webton 34478 by Knowle Burleigh 13187.

¹ Champion Gold Medal given by the National Pig Breeders' Association for the best Sow in Classes 326 and 327.

² Champion Gold Medal given by the National Pig Breeders' Association for the best Boar in Classes 329-331.

³ Prizes given by the National Pig Breeders' Association.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

2674 **III.** (£3.)—**SIR PETER C WALKER**, BT, Osmaston Manor, Derby, for boar, born Feb 7, bred by Mrs. F. Cooper, Culland Hall, Brailsford, Derby; s. Elford Bi-hop 13178, d. Osmaston Rose 2nd 37364 by Osmaston Tom 13233.

2672 **R. N. & H. C.**—**D. W. PHILLIP**, The Redlands, Whitacre, Birmingham

Class 332.—Tamworth Breeding Sows, farrowed in 1909, 1910, or 1911.

[8 entries, 1 absent.]

2681 **I.** (£10.)—**W. J. PITT**, The Albynes, Bridgnorth, for Belle of Albynes 30184, born Jan. 7, 1910, farrowed Jan. 10; s. Elford Lion 13177, d. Knowle Sylvia 20176 by Cicero 9476.

2680 **II.** (£5.)—**D. W. PHILLIP**, The Redlands, Whitacre, Birmingham for Whitacre Cherry Blossom 31300, born June 13, 1909, farrowed Jan. 1; s. Redskin of Whitacre 12319, d. Whitacre Cherry Ripe 22320 by Director of Whitacre 10381.

2679 **III.** (£3.)—**MRS. EDWARD MORANT**, Brokenhurst Park, Hants, for Brokenhurst Megalio 34448, born Jan. 1, 1911, farrowed Jan. 8; s. Forester of Dilton 13179, d. Dilton Megalio 31128 by Dilton Puritan 11355.

2675 **E. N. & H. C.**—**ROBERT DE HAMEL**, Middleton Hall, Tamworth, for Middleton Masika.

Class 333.—Tamworth Sows, farrowed in 1912. [6 entries, none absent.]

2688 **I.** (£10, & Champion.)—**HENRY C. STEPHENS**, Cholderton Lodge, Salisbury, for Queen of Fairies 37356, born Jan. 11; s. Peers Choice 16953, d. Anawann 2nd 37108 by Duke of Gloucester 12777.

2687 **II.** (£5, & E. N. for Champion.)—**MRS. EDWARD MORANT**, Brokenhurst Park, Hants, for Brokenhurst Tiger Lily 37120, born Jan. 2; s. Dick of Osmaston 13143, d. Dilton Tiger Lily 31126 by Forester of Dilton 13479.

2683 **III.** (£3.)—**CHARLES L. COXON**, Webton Court, Madley, Hereford, for Webton Alder 37376, born March 20; s. Rufus of Webton 15861, d. Osmaston Alder 31232 by Rufus of Osmaston 11435.

2686 **R. N. & H. C.**—**W. H. MITCHELL**, Elmdene, Kenilworth, for Elmdene Amelia.

Class 334.—Three Tamworth Sows, farrowed in 1913.

[5 entries, none absent.]

2692 **I.** (£10.)—**MRS. EDWARD MORANT**, Brokenhurst Park, Hants, for sows, born Jan. 9; s. Dick of Osmaston 13143, d. Dilton Tiger Lily 31126 by Forester of Dilton 13179.

2689 **II.** (£5.)—**CHARLES L. COXON**, Webton Court, Madley, Hereford, for sows, born Jan. 10; s. Bishop of Webton 15741, d. Cherry of Webton 34478 by Knowle Burleigh 13187.

2691 **III.** (£3.)—**MRS. EDWARD MORANT**, for sows, born Jan. 7; s. Dick of Osmaston 13143, d. Dilton Megalio 31128 by Dilton Puritan 11355.

2693 **R. N. & H. C.**—**JOHN MYATT**, Lynn House, Lichfield.

Berkshires.

Class 335.—Berkshire Boars, farrowed in 1909, 1910, or 1911.

[6 entries, 1 absent.]

2695 **I.** (£10, & E. N. for Champion.)—**L. CURRIE**, Minley Manor, Farnborough, Hants, for Minley Warrior 15983, born Jan. 7, 1911; s. Highmoor Viscount 12721, d. Motcombe Kitty, 14628 by Dorset Edward 14007.

2696 **II.** (£5.)—**ARTHUR HISCOCK**, Manor Farm, Motcombe, Shaftesbury, Dorset, for Compton Viscount 15516, born May 21, 1910, bred by E. B. Vincent, Waterson, Dorchester; s. Peaceable 14658, d. Compton Dora 14875 by Stratton King 1st 12496.

2690 **III.** (£3.)—**SAMUEL HANDAY**, Puddington Hall, Chester, for Motcombe Cognac 16905, born June 12, 1911, bred by N. Benjafield, Shorts Green Farm, Motcombe, Dorset; s. Cognac 14200, d. Motcombe Greba 2nd 15521 by Motcombe Victor 13257.

2694 **R. N. & H. C.**—**WILFRED BUCKLEY**, Moundsmere Manor, Basingstoke, for Goldicote John.

Class 336.—Berkshire Boars, farrowed in 1912.* [13 entries, 1 absent.]

2708 **I.** (£10.)—**J. W. KIMBER**, Fyfield Wick, Abingdon, for boar, born Jan. 25; s. Farnborough 15823, d. Rubel A 15897 by Earlfield Prince 13710.

2708 **II.** (£5.)—**L. CURRIE**, Minley Manor, Farnborough, for boar, born Jan. 2; s. Compton Supreme 13989, d. Playful 2nd 14630 by Hamlet 2nd 11687.

2702 **III.** (£3.)—**WILFRED BUCKLEY**, Moundsmere Manor, Basingstoke, for Moundsmere General 16595, born June 15; s. Goldicote John 15003, d. Hail Columbia 15063 by Sir Peter H. 13251.

2710 **R. N. & H. C.**—**THE DUKE OF WESTMINSTER**, Eaton Hall, Chester, for Majestic 8th.

* Champion Gold Medal given by the National Pig Breeders' Association for the best Sow in Classes 332 and 333.

* Champion Prize of £5 5s. given by the British Berkshire Society for the best Boar or Sow in Classes 335-338.

* Prizes given by the British Berkshire Society.

cx *Award of Live Stock Prizes at Bristol, 1913.*

[Unless otherwise stated, each prize animal named below was 'bred by exhibitor']

Class 337.—*Berkshire Boars, farrowed in 1913.* [11 entries, 1 absent.]

- 2713 I. (£10.)—HIS MAJESTY THE KING, Sandringham, for boar, born Jan. 3, s. Motcombe Man, d. Motcombe Queen 16700 by Cognac 14206
 2720 II. (£5.)—ARTHUR HISCOCK, Manor Farm, Motcombe, Shillinglebury, for boar, born Jan. 4; s. Compton Viscount 15516, d. Favourite Lady 10876 by Wyndthorpe Canton 14324.
 2721 III. (£3.)—WILLIAM VERNON JUDD, Eastanton, Andover, for boar, born Jan. 4; s. Postman 16159, d. Elvetham Homely 2nd 15689 by Stoke Mikado 12017
 2725 IV. (£2.)—SAMUEL SANDAY, Puddington Hall, Chester, for boar, born Jan. 2; s. Puddington Caruso 2nd 15008, d. Polegate Dorothy 13018 by Harold H. 10238
 2715 R. N. & H. C.—WILFRED BUCKLEY, Moundsmere Manor, Basingstoke.

Class 338.—*Berkshire Breeding Sows, farrowed in 1909, 1910, or 1911.* [6 entries, 2 absent.]

- 2730 I. (£10.)—L. CURRIE, Minley Manor, Farnborough, for Minley Primrose 15000, born Jan. 18, 1910, farrowed Jan. 3; s. Compton Supreme 13998, d. Minley Rosamond 13907 by Highmoor Viscount 12721.
 2728 II. (£5.)—WILFRED BUCKLEY, Moundsmere Manor, Basingstoke, for Moundsmere Brilliance 16021, born Dec. 2, 1910, farrowed Feb. 23; s. Postgrove 15009, d. Crews Brilliance 14607 by Stallpitts Dandy 13053.
 2727 III. (£3.)—HIS MAJESTY THE KING, Sandringham, for Motcombe Queen 16700, born June 12, 1911, farrowed Jan. 3, bred by N. Benjafield, Shorts Green Farm, Motcombe; s. Cognac 14206, d. Motcombe Greba 2nd 15321 by Motcombe Victor 13527.
 2732 R. N. & H. C.—THE DUKE OF WESTMINSTER, Eaton Hall, Chester, for Crews Model.

Class 339.—*Berkshire Sows, farrowed in 1912.* [13 entries, 2 absent.]

- 2740 I. (£10, & Champion.¹)—WILLIAM VERNON JUDD, Eastanton, Andover, for Moundsmere Betka 16676, born Jan. 2, bred by Wilfred Buckley, Moundsmere Manor, Basingstoke; s. Axiord Viscount 15008, d. Harebell 1st 15011 by Sir Frank 14658.
 2735 II. (£5.)—L. CURRIE, Minley Manor, Farnborough, for sow, born Jan. 12; s. Highmoor Viscount 12721, d. Wyndthorpe Candidate 13248 by Don Camphor 12387.
 2734 III. (£3.)—WILFRED BUCKLEY, Moundsmere Manor, Basingstoke, for Moundsmere Primrose 16th 16531, born March 8; s. Moundsmere Prince 16042, d. Moundsmere Primrose 3rd 15218 by Danesfield Gardner 14525.
 2739 R. N. & H. C.—D. E. HIGHAM, Coombelands, Addlestone, Surrey, for Ongar Dulcimer 2nd.

Class 340.—*Three Berkshire Sows, farrowed in 1913.*

[8 entries, none absent.]

- 2747 I. (£10.)—WILFRED BUCKLEY, Moundsmere Manor, Basingstoke, for sow, born Jan. 1; s. Moundsmere Curcio 15228, d. Compton Dowager 2nd 14979 by Stritten King 1st 12496
 2749 II. (£5.)—JULIUS A. FRICKER, Suddon Grange, Wincanton, for sow, born Jan. 5; s. Robert 14635, d. Suddon Belinda 12991 by Highside 9373.
 2750 III. (£3.)—ARTHUR HISCOCK, Manor Farm, Motcombe, Shillinglebury, for sow, born Jan. 1; s. Compton Viscount 15516, d. Favourite Lady 10876 by Wyndthorpe Canton 14324.
 2753 R. N. & H. C.—SAMUEL SANDAY, Puddington Hall, Chester.

Large Blacks.

Class 341.—*Large Black Boars, farrowed in 1909, 1910, or 1911.*

[8 entries, none absent.]

- 2757 I. (£10, & Champion.²)—TERAH F. HOOLEY, Dry Drayton, Cambridge, for Drayton King 3767, born June 30, 1911; s. Henley Achilles 1990, d. Marchmont 7th 7580 by The Prior 1427.
 2756 II. (£5.)—TERAH F. HOOLEY, for Drayton Disappointment 3337, born July 26, 1909; s. Drayton Demon 4th 2353, d. Drayton Dainty 8th 7148 by Henley Achilles 1990.
 2761 III. (£3.)—WILLIAM WILLS, Marlwood, Thornbury, Gloucester, for Drayton Dandy 3331, born Jan. 3, 1910, bred by Terah F. Hooley, Dry Drayton, Cambridge, s. Drayton Demon 4th 2353, d. Drayton Dainty 11th 7800 by Henley Achilles 1990.
 2754 R. N. & H. C.—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Samson.

¹ Champion Prize of £5 5s. given by the British Berkshire Society for the best Boar or Sow in Classes 337-339.

² Champion Prize of £10 given by the Large Black Pig Society for the best Boar in Classes 341-343.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 342.—Large Black Boars, farrowed in 1912.¹

[7 entries, 3 absent.]

- 2702 I. (£10, & R. N. for Champion.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk for Sudbourne Admiral 3941, born Jan. 3; s. Brent Aviator 3663, d. Sudbourne Mistress 9036 by Black Boy 3001.
 2763 II. (£5.)—TERAH F. HOOLEY, Dry Drayton, Cambridge, for Drayton Peter 4017, born April 16; s. Henry Achille 1999, d. Drayton Violet 9010 by Drayton Demon 4th 2353.
 2768 III. (£3.)—STANLEY A. STIMPSON, Arminghall, Norwich, for Bixley Non Such 5th 3991, born March 1; s. Bixley Non Such 3rd 3561, d. Drayton Missie 1st 8892 by Drayton Demon 4th 2353.
 2766 R. N. & H. C.—F. A. JOHNS, Cleave, Kelly, Lutton, Devon, for Cleave Hero.

Class 343.—Large Black Boars, farrowed in 1913. [19 entries, none absent.]

- 2781 I. (£10.)—W. S. WARD, Menna, Grampond Road, Cornwall, for boar, born Jan. 7; s. Brent General 8687, d. Menna Queen 8th 10106 by Wonder of the West 8017.
 2780 II. (£5.)—STANLEY A. STIMPSON, Arminghall, Norwich, for Bixley Sutler 4077, born Jan. 5; s. Sudbourne Bixley 1st 3899, d. Bixley Eva 8906 by Drayton Demon 2nd 2351.
 2778 III. (£3.)—JOHN C. OLVER, Woodland Valley, Ladoek, for boar, born Jan. 2; s. Old Fashion 3411, d. Menna Choice 10058 by Wonder of the West 8017.
 2777 IV. (£2.)—JOHN C. OLVER, for boar, born Jan. 2; s. Old Fashion 3411, d. Menna Choice 10058 by Wonder of the West 8017.
 2783 R. N. & H. C.—JOHN WARNE, Treveglor, St. Mabyn, for Treveglor Royal Boy.

Class 344.—Large Black Breeding Sows, farrowed in 1909, 1910, or 1911.

[8 entries, 2 absent.]

- 2795 I. (£10, & Champion.)—WILLIAM WILLS, Marlwood, Thornbury, Glos., for Lustleigh Marchioness 18th 10284, born July 6, 1910, farrowed Feb. 2; s. Talisman 2993, d. Marchioness 10th 8248 by The Prior 1437.
 2788 II. (£5.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Miss Kitty 10140, born Jan. 14, 1911, farrowed Feb. 18; s. Sudbourne Saint 2761, d. Drayton Mistress 2nd 8190 by Drayton Demon 4th 2353.
 2792 III. (£3.)—JOHN WARNE, Treveglor, St. Mabyn, Cornwall, for Treveglor Lass 6th 10328, born Jan. 23, 1911, farrowed Feb. 12; s. Sudbourne Jock 3005, d. Treveglor Lass 2nd 8220 by Trevisquite Confidence 1203.
 2794 R. N. & H. C.—W. J. WARREN, Farthing Farm, Corneytrowe, Taunton, for Kibbear Black Lady 2nd.

Class 345.—Large Black Sows, farrowed in 1912. [10 entries, none absent.]

- 2804 I. (£10, & R. N. for Champion.)—JOHN WARNE, Treveglor, St. Mabyn, Cornwall, for Treveglor Angelina 2nd, born Jan. 20; s. Prior of the Valley 2737, d. Treveglor Angelina 8th 76 by Treveglor Pride 2221.
 2797 II. (£5.)—TERAH F. HOOLEY, Dry Drayton, Cambridge, for Drayton Annie 11451, born May 2; s. Oaklands Victor 3579, d. Drayton Daisy 2nd 9708 by Henley Victor 2917.
 2799 III. (£3.)—JOHN C. OLVER, Woodland Valley, Ladoek, Cornwall, for Flower of the Valley, born July 5; s. Bockan Masterpiece 3365, d. Queen of the Valley 4th 1053 by Tinton Lucky Boy 3513.
 2796 R. N. & H. C.—KENNETH M. CLARK, Sudbourne Hall, Orford, for Sudbourne Jewel.

Class 346.—Three Large Black Sows, farrowed in 1913.

[9 entries, 2 absent.]

- 2813 I. (£10.)—W. & H. WHITLEY, Primley Farm, Paignton, Devon, for sows, born Jan. 9; s. Tiptree 1st 2933, d. Primley Darnson 10170 by Tiptree 1st 2833.
 2808 II. (£5.)—F. A. PERKINS, Little Offley Farm, Hitchin, for sows, born Jan. 10; s. Sudbourne Nigrito 3355, d. Sudbourne Salad 7818 by Sudbourne Surprise 1723.
 2811 III. (£3.)—JOHN WARNE, Treveglor, St. Mabyn, Cornwall, for Treveglor Lass 7th, Treveglor Lass 8th, and Treveglor Lass 9th, born Feb. 12; s. Bixley Non Such 2nd 3487, d. Treveglor Lass 6th 10536 by Sudbourne Jock 3005.
 2807 R. N. & H. C.—TERAH F. HOOLEY, Dry Drayton, Cambridge.

¹ Prizes given by the Large Black Pig Society.

² Champion Prize of £10 given by the Large Black Pig Society for the best Boar in Classes 341-343.

³ Silver Challenge Cup given by the Large Black Pig Society for the best Sow in Classes 344 and 345.

[Unless otherwise stated each prize animal named below was "bred by exhibitor."]

Lincolnshire Curly-coated.

Class 347.—*Lincolnshire Curly-coated Boars, farrowed in 1909, 1910, or 1911.*
[5 entries, none absent.]

- 2819 I. (£10, & Champion.¹)—LEOPOLD C. HARVEY, Spalding, for *Ruston's Scorchers* 2337, born in April, 1911, bred by H. G. Thorpe, Hemswell Grange Lincoln; s. *Mushland Magnus* 1849, d. *Ruston's Favourite* 3023 by *Hemswell Sam* 477.
2818 II. (£5.)—GEORGE FREIR, Toilethorpe House, Deeping St Nicholas, Spalding, for *Vamona Deeping* 2141, born Jan. 21, 1911, bred by O. W. Tindall, Wainfleet Hall, Lincs.; s. *St Mary's Wait* and *See* 1863, d. *Midville Doris* 2nd 5528 by *Firstby Chevalier* 738.
2816 III. (£3.)—FRED CASSWELL, JUN., Manor House, Graby, Folkingham, for *Osborne Energy* 2291, born Jan. 28, 1911, bred by F. G. & R. Mowbray, Goudberton; s. *Caythorpe Prince* 1898, d. *Osborne Dot* 5626 by *Whaplode Curly* 3rd 637.
2815 E. N. & H. C.—FREDERICK E. BOWSER, Wigtoft, Boston, for *Westfield March*.

Class 348.—*Lincolnshire Curly-coated Boars, farrowed in 1912.*²
[7 entries, 1 absent.]

- 2820 I. (£10, & R. N. for Champion.¹)—WILLIAM BRAY, East Keal, Spilsby, for *Hemswell Farmer George* 4th, born Jan. 9, bred by Coggan Brunby, Hemswell, Lincoln, s. *Sibsey Canon* 1931, d. *Deeping Pride* 16th 3634 by *Carrington Grange Cedric* 797.
2821 II. (£5.)—F. J. CAUDWELL, Manor House, Sibsey, Boston, for *Havenhouse Fighter*, born Feb. 1, bred by W. M. Epton, Bank House, Croft, Wainfleet; s. *Caythorpe Emperor* 1801, d. *Havenhouse Grace* by *Firstby Defender* 1061.
2823 III. (£3.)—GEORGE FREIR, Toilethorpe House, Deeping St Nicholas, Spalding, for *Deeping Count*, born Jan. 4, bred by P. Neal, Deeping St Nicholas; s. *Wigtoft Deeping* 2407, d. *Deeping Countess* 2nd 6524 by *Carrington Grange Cedric* 797.
2825 E. N. & H. C.—O. FELDEN MOSLEY, Leasingham, Sleaford, for *Westfield Duke*.

Class 349.—*Lincolnshire Curly-coated Boars, farrowed in 1913.*
[10 entries, 1 absent.]

- 2835 I. (£10.)—EDMUND ROYDS, M.P., Holy Cross, Caythorpe, Grantham, for boar, born Jan. 9; s. *Caythorpe Choice* 2585, d. *Caythorpe Pride* by *Caythorpe Samson* 879.
2834 II. (£5.)—LEOPOLD C. HARVEY, Spalding, for *Ruston's Marshland*, born Jan. 9, bred by H. G. Thorpe, Hemswell Grange, Lincoln; s. *Wigtoft Dreadnought* 2109, d. *Ruston's Queen* 6894 by *Marshland Magnus* 1649.
2831 III. (£3.)—JOHN COOK, Weston Hills, Spalding, for boar, born Jan. 7; s. *Carrington Grange Dardalus* 991, d. *Weston Favourite* 1st 7082 by *Weston Portland* 1897.
2837 E. N. & H. C.—FREDERICK E. BOWSER, Wigtoft, Boston, for *Wigtoft Aaron*.

Class 350.—*Lincolnshire Curly-coated Breeding Sows, farrowed in 1909, 1910, or 1911.* [6 entries, none absent.]

- 2841 I. (£10, & Champion.³)—LEOPOLD C. HARVEY, Spalding, for *Marshland Marion* 3rd 6183, born in Jan., 1911, farrowed Jan. 8; s. *Londesborough Prince* 1125, d. *Marshland Marion* 2nd 6180 by *Marshland Primus* 1131.
2838 II. (£5.)—HENRY CAUDWELL, Old Lenke, Boston, for *Midville Mistress*, born July 28, 1911, farrowed Jan. 14, bred by William Bray, East Keal, Spilsby; s. *Keal Wainfleet* 2107, d. *Keal Suspense* 6th 3960 by *Firstby Chevalier* 733.
2842 III. (£3.)—LEOPOLD C. HARVEY, for *Marshland Martha* 4th 6188, born in Jan., 1911, farrowed Jan. 8; s. *Londesborough's Prince* 1125, d. *Marshland Martha* 5388 by *Portland Charley* 1183.
2837 E. N. & H. C.—WILLIAM BRAY, East Keal, Spilsby, for *Keal Ada*.

Class 351.—*Lincolnshire Curly-coated Sows, farrowed in 1912.*
[5 entries, none absent.]

- 2845 I. (£10, & R. N. for Champion.³)—LEOPOLD C. HARVEY, Spalding, for *Marshland Marion* 4th, born in Jan.; s. *Marshland Duke* 2073, d. *Marshland Marion* 2nd 6180 by *Marshland Primus* 1133.
2847 II. (£5.)—GERSHOM SIMPSON, Charnwood House, Caythorpe, Lowdham, Nottingham, for *Charnwood Duchess* 2nd 8012, born Jan. 13; s. *Keal Topper* 3111, d. *Midville Green Girl* 3rd 6040 by *Midville Abbott* 1145.
2846 III. (£3.)—LEOPOLD C. HARVEY, for *Marshland Minnie* 8th, born in April; s. *Marshland Duke* 2073, d. *Marshland Minnie* 2nd 5398 by *Holbeach Hero* 1st 1101.
2844 E. N. & H. C.—GEORGE GODSON, Asgarby, Heckington.

¹ Champion Prize of £5 5s. given by the Lincolnshire Curly-coated Pig Breeders' Association for the best Boar in Classes 347-349.

² Prizes given by the Lincolnshire Curly-coated Pig Breeders' Association.

³ Champion Prize of £5 5s. given by the Lincolnshire Curly-coated Pig Breeders' Association for the best Sow in Classes 350 and 351.

[Unless otherwise stated, each prize animal named below was 'bred by exhibitor.']

Class 352.—Three Lincolnshire Curly-coated Soies, farrowed in 1913.

[5 entries, 1 absent.]

- 2850 I. (£10).—JOHN COCK, Weston Hills, Spalding, for sows, born Jan 7; s. Carrington Grange Daddalus 991, d. Weston Favourite 1st 7082 by Weston Postland 1897.
 2851 II. (£5).—GEORGE GODSON, Aghaib, Heckington, for sows, born Feb 15; s. Gibraltar Friar 2199, d. Heckington Goose 6708 or Heckington Humbug by Heckington Holme, 1087 or Fulletby Spalding 1455
 2818 III. (£3).—FREDERICK E. BOWSER, Wigtoft, Boston, for sows, born Jan. 5; s. Firstly Drendnought 1050, d. Wigtoft Princess, 10th 7154 by Wigtoft Banker 1905
 2849 R. N. & H. C.—FRED CASSWELL, JUN., Manor House, Graby, Folkingham, for Graby Sunshine, Graby Sunshade, and Graby Sunbeam.

POULTRY.

By "Cock," "Hen," "Drake," "Duck," "Gander," and "Goose," are meant birds hatched previous to January 1, 1913; and by "Cockerel," "Pullet," "Young Drake," and "Duckling," are meant birds hatched in 1913, previous to June 1.

Class 353.—Old English Game Spangled Cocks. [5 entries.]

- 5 I. (30s.).—R. S. MARSDEN, Kempstone, Clitheroe.
 4 II. (20s.).—WALTER FIRTH, Read, Blackburn
 1 III. (10s.).—MISS R. B. BABCOCK, Grange Hill Prize Poultry Yards, Chigwell Row.
 3 R. N. & H. C.—THE COUNTESS OF CRAVEN, Coombe Abbey, Coventry.

Class 354.—Old English Game Spangled Hens. [6 entries.]

- 11 I. (30s.).—R. S. MARSDEN, Kempstone, Clitheroe.
 10 II. (20s.).—WALTER FIRTH, Read, Blackburn.
 9 III. (10s.).—JOHN PRIOR, 22 Adam Street, Abertillery.
 8 R. N. & H. C.—THE COUNTESS OF CRAVEN, Coombe Abbey, Coventry.

Class 355.—Old English Game Black-Red Cocks. [11 entries.]

- 20 I. (30s.).—T. C. HEATH, Keele, Newcastle, Staffs.
 15 II. (20s.).—THE COUNTESS OF CRAVEN, Coombe Abbey, Coventry.
 12 III. (10s.).—MISS R. B. BABCOCK, Grange Hill Prize Poultry Yards, Chigwell Row.
 14 R. N. & H. C.—R. W. L. FERNANDES, The Red House, Redbourn, Herts.

Class 356.—Old English Game Clay or Wheaten Hens. [8 entries.]

- 25 I. (30s.).—R. W. L. FERNANDES, The Red House, Redbourn, Herts.
 20 II. (20s.).—JOHN OLIVER, Threepwood Farm, Haydon Bridge.
 24 III. (10s.).—THE COUNTESS OF CRAVEN, Coombe Abbey, Coventry.
 26 R. N. & H. C.—T. C. HEATH, Keele, Newcastle, Staffs.

Class 357.—Old English Game Cocks, any other colour.

[9 entries.]

- 32 I. (30s.).—THE COUNTESS OF CRAVEN, Coombe Abbey, Coventry.
 26 II. (20s.).—T. C. HEATH, Keele, Newcastle, Staffs.
 33 III. (10s.).—JAMES R. CROMPTON, Frobury Manor, Abinger, Dorking
 34 R. N. & H. C.—R. W. L. FERNANDES, The Red House, Redbourn, Herts.

Class 358.—Old English Game Hens, any other colour.

[4 entries.]

- 42 I. (30s.).—R. S. MARSDEN, Kempstone, Clitheroe.
 41 II. (20s.). & 43 III. (10s.).—T. C. HEATH, Keele, Newcastle, Staffs.
 40 R. N. & H. C.—THE COUNTESS OF CRAVEN, Coombe Abbey, Coventry.

Class 359.—Old English Game Cockerels, any colour. [5 entries.]

- 45 I. (30s.).—T. C. HEATH, Keele, Newcastle, Staffs.
 47 II. (20s.).—R. S. MARSDEN, Kempstone, Clitheroe.
 48 III. (10s.).—THE COUNTESS OF CRAVEN, Coombe Abbey, Coventry.
 48 R. N. & H. C.—JOHN WATSON, Eden Mount, Kendal.

Class 360.—Old English Game Pullets, any colour. [10 entries.]

- 40 I. (30s.).—MISS R. B. BABCOCK, Grange Hill Prize Poultry Yards, Chigwell Row.
 56 II. (20s.).—R. S. MARSDEN, Kempstone, Clitheroe.
 58 III. (10s.).—THE COUNTESS OF CRAVEN, Coombe Abbey, Coventry.
 57 R. N. & H. C.—ROBERT SLADING, Barkerhouse Road, Nelson.

cxiv *Award of Poultry Prizes at Bristol, 1913.*

Class 361.—Indian Game Cocks or Cockerels. [12 entries.]

- 63 I. (30s.), & 59 R. N. & H. C.—J. H. BAKER & SON, The Forge, Burnstaple.
64 II. (20s.)—THE COUNTESS OF CRAVEN, Coombe Abbey, Coventry.
68 III. (10s.)—G. TEMPLEMAN, 43 High Street, Taunton.

Class 362.—Indian Game Hens or Pullets. [12 entries.]

- 70 I. (30s.)—THE COUNTESS OF CRAVEN, Coombe Abbey, Coventry.
77 II. (20s.)—WALTER FIRTH, Read, Blackburn.
78 III. (10s.)—F. J. JARRETT, 16 Glanymant Road, Whitchurch, Cardiff.
71 R. N. & H. C.—J. H. BAKER & SON, The Forge, Barnstaple.

Class 363.—Modern Game Cocks or Cockerels, any colour.

[6 entries.]

- 87 I. (30s.), & 85 R. N. & H. C.—W. GARNE, Abington, Fairford, Glo.
83 II. (20s.), & 86 III. (10s.)—WALTER FIRTH, Read, Blackburn.

Class 364.—Modern Game Hens or Pullets, any colour.

[6 entries.]

- 93 I. (30s.), & 90 III. (10s.)—WALTER FIRTH, Read, Blackburn.
91 II. (20s.)—W. B. FOWLER, Great Gransden, Sandy, Beds.
94 R. N. & H. C.—HENRY TANNER, 11 Westgate Building, Bath.

Class 365.—Black Sumatra Game Cocks or Cockerels.

[10 entries.]

- 101 I. (30s.), & 97 R. N. & H. C.—F. R. EATON, Cleveland House, Eaton, Norwich.
103 II. (20s.)—THE REV. W. SERJEANTSON, Acton Burnell Rectory, Shrewsbury.
104 III. (10s.)—MRS. WINSLOE, Dunsdale, Frodsham, Cheshire.

Class 366.—Black Sumatra Game Hens or Pullets.

[11 entries.]

- 111 I. (30s.), & 114 R. N. & H. C.—F. R. STEPHENS, 11 West Park Terrace, Crown Hill, Devon.
115 II. (20s.)—MRS WINSLOE, Dunsdale, Frodsham, Cheshire.
105 III. (10s.)—DAVID B. CHESTERFIELD, Rock House, Glynneath, Glam.

Class 367.—Langshan Cocks or Cockerels. [6 entries.]

- 116 I. (30s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
121 II. (20s.)—J. W. WALKER, Normanstead, Henley-on-Thames.
117 III. (10s.)—MAJOR H. M. BARNES, Stonecroft, Ipswich.
119 R. N. & H. C.—E. B. THOMAS, Spur Cottage, Newton, Porthcawl, Glam.

Class 368.—Langshan Hens or Pullets. [7 entries.]

- 124 I. (30s.)—J. W. WALKER, Normanstead, Henley-on-Thames.
125 II. (20s.)—R. S. MARSDEN, Kempstone, Oltherne.
122 III. (10s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
123 R. N. & H. C.—GEORGE FRIEDER, 19 Worple Road, Wimbledon.

Class 369.—Croad Langshan Cocks or Cockerels. [22 entries.]

- 130 I. (30s., & Champion.¹)—EDWARD COCKER, 101 Towngate, Leyland, Lancs.
146 II. (20s.), & 143 R. N. & H. C.—NORMAN N. JOHNSTON, The Croft, Five Ashes, Sussex.
142 III. (10s.)—R. O. RIDLEY, Docking Hall, King's Lynn.

Class 370.—Croad Langshan Hens or Pullets [16 entries.]

- 164 I. (30s.), & R. N. for Champion¹), & 153 R. N. & H. C.—II. PIKE PEASE, M.P., Merrow Croft, Guildford.
165 II. (20s.)—THOMAS RICHARDS, 17 Church Street, Loughhead, Midlothian.
166 III. (10s.)—R. O. RIDLEY, Docking Hall King's Lynn.

Class 371.—White Plymouth Rock Cocks or Cockerels. [3 entries.]

- 167 I. (30s.)—MRS E. CALLARD, Buckfastleigh, Devon.
168 II. (20s.)—J. MARSDEN CHANDLER, Fairfield, Bampton, Cheshirefield.

Class 372.—White Plymouth Rock Hens or Pullets. [6 entries.]

- 173 I. (30s., & Champion.²)—J. MARSDEN CHANDLER, Fairfield, Bampton, Cheshirefield.
171 II. (20s.)—MRS E. CALLARD, Buckfastleigh, Devon.
173 III. (10s.)—J. H. FIMBLEY, 61 Llandaff Road, Canton, Cardiff.
170 R. N. & H. C.—J. M. BLACKWOOD, Cranhill Poultry Farms, Street, Somerset.

¹ Special Prize of 20s. given by the Croad Langshan Club for the best Croad Langshan in Classes 369 and 370

² Silver Serviette Ring, given by the White Plymouth Rock Club for the best White Plymouth Rock in Classes 371 and 372.

Class 373. — *Barred Plymouth Rock Cocks*. [15 entries.]

- 178 I. (30s. & Champion¹), & 181 III. (10s.)—J. MARSDEN CHANDLER, Fairfield, Brampton, Chesterfield.
185 II. (20s.)—GEORGE E. GUSH, Thackham, Winchfield.
179 R. N. & H. C.—WILLIAM CHARLES, Gammons, Rothie Norman, Aberdeen.

Class 374. — *Barred Plymouth Rock Hens*. [17 entries.]

- 205 I. (30s., & R. N. for Champion.¹)—ARTHUR I. ROWELL, Bury Manor, Ramsey, Hunts.
199 II. (20s.) L. H. NUTTER, Burton, Carnforth.
193 III. (10s.)—W. H. BREWER, Uxella Poultry Park, Lostwithiel.
197 R. N. & H. C.—E. MARSHALL, Hollyhyrst, Lenton, Nottingham.

Class 375. — *Barred Plymouth Rock Cockerels*. [17 entries.]

- 211 I. (30s.)—G. A. JACKSON, Buckstone House, Carnforth.
231 II. (20s.)—JOHN TAYLOR, Heath Farm, Tiptree, Essex.
230 III. (10s.)—FRANK NEAVE, Lingwood, Norwich.
216 R. N. & H. C.—FAWCETT BROS., Treby Hall, Cowan Bridge, Kirkby Lonsdale.

Class 376. — *Barred Plymouth Rock Pullets*. [21 entries.]

- 234 I. (30s.)—J. MARSDEN CHANDLER, Fairfield, Brampton, Chesterfield.
229 II. (20s.)—FRANK NEAVE, Lingwood, Norwich.
240 III. (10s.)—R. H. MILNER, Mowbrick, West Bank, Lancaster.
227 R. N. & H. C.—JAMES BATEMAN, Milnthorpe.

Class 377. — *Buff Plymouth Rock Cocks or Cockerels*. [12 entries.]

- 249 I. (30s., & Champion.¹)—R. S. MARSDEN, Kempstone, Oltheroe.
252 II. (20s.)—J. MARSDEN CHANDLER, Fairfield, Brampton, Chesterfield.
248 III. (10s.)—MISS LUCY CLABURN, Linden House, Berles.
246 R. N. & H. C.—JAMES BATEMAN, Milnthorpe.

Class 378. — *Buff Plymouth Rock Hens or Pullets*. [12 entries.]

- 260 I. (30s., & R. N. for Champion.²)—J. MARSDEN CHANDLER, Fairfield, Brampton, Chesterfield.
263 II. (20s.)—R. H. MILNER, Mowbrick, West Bank, Lancaster.
269 III. (10s.)—MRS WILKINSON, Burrow, Scotforth, Lancs.
258 R. N. & H. C.—JAMES BATEMAN, Milnthorpe.

Class 379. — *Blue Plymouth Rock Cocks, Cockerels, Hens or Pullets*. [12 entries.]

- 275 I. (30s.), 272 II. (20s.), & 278 R. N. & H. C.—ARTHUR I. ROWELL, Bury Manor, Ramsey, Hunts.
281 III. (10s.)—MRS WILKINSON, Burrow, Scotforth, Lancs.

Class 380. — *Plymouth Rock Cocks, any other colour*. [3 entries.]

- 283 I. (30s.)—FAWCETT BROS., Treby Hall, Cowan Bridge, Kirkby Lonsdale.
282 II. (20s.)—JOHN BAINES, Town End, Kirkby Lonsdale.
284 III. (10s.)—HERBERT GARLICK, 26 Main Street, Kirkby Lonsdale.

Class 381. — *Plymouth Rock Hens, any other colour*. [5 entries.]

- 286 I. (30s.)—JAMES BATEMAN, Milnthorpe.
287 II. (20s.)—J. MARSDEN CHANDLER, Fairfield, Brampton, Chesterfield.
285 III. (10s.)—MRS. W. R. ABBEY, Croft Farm, Hessay, York.
288 R. N. & H. C.—HERBERT GARLICK, 26 Main Street, Kirkby Lonsdale.

Class 382. — *Plymouth Rock Cockerels, any other colour*. [2 entries.]

- 291 I. (30s.)—ART C. GILBERT, Swanley, Kent.

Class 383. — *Plymouth Rock Pullets, any other colour*. [4 entries.]

- 295 I. (30s.)—ART C. GILBERT, Swanley, Kent.
294 II. (20s.)—HARRY NELSON, Barbon, Kirkby Lonsdale.
293 III. (10s.)—FAWCETT BROS., Treby Hall, Cowan Bridge, Kirkby Lonsdale.

Class 384. — *Gold or Silver Laced Wyandotte Cocks*. [4 entries.]

- 296 I. (30s.)—TOM H. FURNESS, Carlton House, Chesterfield.
297 II. (20s.)—J. HODGE, 8 Graham Road, Easton, Bristol.
299 III. (10s.)—HOOD & EVANS, 9 Vine Street, Abercarn, Mon.

¹ Silver Serviette Ring, given by the Barred Plymouth Rock Club for the best Barred Plymouth Rock in Classes 373-378.

² Silver Serviette Ring, given by the Buff Plymouth Rock Club for the best Buff Plymouth Rock in Classes 377 and 378.

Class 385.—Gold or Silver Laced Wyandotte Hens. [5 entries.]

- 303 I. (30s.)—TOM H. FURNESS, Carlton House, Chesterfield.
 300 II. (20s.)—THOMAS ABBOT, Wymondham.
 302 III. (10s.)—ALBERT H. CAPPER, 23 Treharne Street, Pentre, Rhondda, Glam.
 301 R. N. & H. C.—R. P. CRUMP, Dutchcombe Poultry Farm, Painswick, Glos.

Class 386.—Gold or Silver Laced Wyandotte Cockerels. [4 entries.]

- 308 I. (30s.)—TOM H. FURNESS, Carlton House, Chesterfield.
 307 II. (20s.)—ART O. GILBERT, Swanley, Kent

Class 387.—Gold or Silver Laced Wyandotte Pullets. [7 entries.]

- 312 I. (30s.) & 315 II. (20s.)—J. M. PHILIPSON, Wyandotte Farm, Haydon Bridge.
 310 III. (10s.)—TOM H. FURNESS, Carlton House, Chesterfield.
 309 R. N. & H. C.—W. E. H. HANCOCK, Sidney Villa, Churchill, Somerset.

Class 388.—White Wyandotte Cocks. [13 entries.]

- 328 I. (30s.), & R. N. for Champion.¹—ROBERT STEPHENSON, Manor House, Burwell, Cambs.
 320 II. (20s.), & 327 R. N. & H. C.—TOM H. FURNESS, Carlton House, Chesterfield.
 316 III. (10s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.

Class 389.—White Wyandotte Hens. [8 entries.]

- 334 I. (30s., & Champion.¹)—MRS. B. NANCARROW, Bosvigo White Wyandotte Farm, Truro.
 331 II. (20s.)—TOM H. FURNESS, Carlton House, Chesterfield.
 336 III. (10s.)—SAMUEL TURNER, Packington Road, Ashby-de-la-Zouch.
 330 R. N. & H. C.—NORMAN A. AXE, Manor Farm, Bonsall, Matlock.

Class 390.—White Wyandotte Cockerels. [22 entries.]

- 355 I. (30s.)—MRS. B. NANCARROW, Bosvigo White Wyandotte Farm, Truro.
 354 II. (20s.)—JOHN WHARTON, Honeycott Farm, Hawes, Yorks.
 346 III. (10s.)—TOM H. FURNESS, Carlton House, Chesterfield.
 337 R. N. & H. C.—MISS E. BARKER, Burton House, Burton, Westmorland.

Class 391.—White Wyandotte Pullets. [25 entries.]

- 380 I. (30s.)—JOHN WHARTON, Honeycott Farm, Hawes, Yorks.
 374 II. (20s.)—HUGH GUNN, Castle Villa Poultry Farm, Gloucester.
 367 III. (10s.)—TOM H. FURNESS, Carlton House, Chesterfield.
 361 R. N. & H. C.—MRS. E. CALLARD, Buckfastleigh, Devon.

Class 392.—Black Wyandotte Cocks. [6 entries.]

- 385 I. (30s.), & 388 II. (20s.)—T. C. HEATH, Keele, Newcastle, Staffs.
 387 III. (10s.)—ERNEST J. LE RUEZ, Westfield, St. Mary's, Jersey.
 384 R. N. & H. C.—THOMAS ABBOT, Wymondham.

Class 393.—Black Wyandotte Hens. [10 entries.]

- 393 I. (30s.)—T. C. HEATH, Keele, Newcastle, Staffs.
 395 II. (20s.)—W. W. THOMAS, 30 Sydney Street, Brynhyfryd, Swansea.
 398 III. (10s.)—DR. ROBERT W. GIBSON, Orton, Tisbury.
 391 R. N. & H. C.—TOM H. FURNESS, Carlton House, Chesterfield.

Class 394.—Black Wyandotte Cockerels. [4 entries.]

- 400 I. (30s.)—MISS R. B. BADCOCK, Grange Hill Prize Poultry Yards, Chiswell Row.
 401 II. (20s.)—ALFRED BIRCH, Edgo Farm, Selson, Liverpool.
 402 III. (10s.)—HODGE & PEARCE, 91 Graham Road, Easton, Bristol.

Class 395.—Black Wyandotte Pullets. [8 entries.]

- 407 I. (30s.)—T. C. HEATH, Keele, Newcastle, Staffs.
 410 II. (20s.)—HERBERT GARLICK, 28 Main Street, Kirkby Lonsdale.
 406 III. (10s.)—GEORGE WOOD, Westfield, Greetland, Halifax.
 405 R. N. & H. C.—TOM H. FURNESS, Carlton House, Chesterfield.

Class 396.—Partridge Wyandotte Cocks or Cockerels. [7 entries.]

- 412 I. (30s.), & 418 II. (20s.)—RICHARD WATSON, Thorngarth, Thackley, Bradford.
 413 III. (10s.)—C. FEAR, Staplegrave, Taunton.
 417 R. N. & H. C.—SAMUEL ROBERTS, The Highlands, Greetland, Halifax.

Class 397.—Partridge Wyandotte Hens or Pullets. [6 entries.]

- 424 I. (30s.)—JOHN WHARTON, Honeycott Farm, Hawes, Yorks.
 423 II. (20s.)—RICHARD WATSON, Thorngarth, Thackley, Bradford.
 420 III. (10s.)—HUGH GUNN, Castle Villa Poultry Farm, Gloucester.
 421 R. N. & H. C.—F. W. MYHILL, The Red House, Hotbel, Norwich.

¹ Special Prize of 10s. given by the White Wyandotte Club for the best White Wyandotte in Classes 388-391.

Class 398.—Columbian Wyandotte Cocks or Cockerels. [15 entries.]

- 432 I. (30s.), & 438 II. (20s.)—HUBERT WRIGHT, Laurel Grove, Keighley.
 433 III. (10s.)—J. THORP HINCKES, Sileby, Loughborough.
 435 R. N. & H. C.—R. S. THORP, Daisymere, Buxton.

Class 399.—Columbian Wyandotte Hens or Pullets. [13 entries.]

- 441 I. (30s.) & 445 III. (10s.)—WILLIAM HODGES, Otlands Farm, Weybridge
 450 II. (20s.)—J. THORP HINCKES, Sileby, Loughborough.
 440 R. N. & H. C.—MRS. GILL, Fleet Farm, Weymouth.

Class 400.—Blue Wyandotte Cocks or Cockerels. [5 entries.]

- 456 I. (30s.)—MRS W. HOLDSWORTH, St. Jude's Road West, Wolverhampton.
 455 II. (20s.)—TOM H. FURNESS, Carlton House, Chesterfield
 457 III. (10s.)—THE REV. J. N. WYNNE WILLIAMS, The Vicarage, Chapel-le-Dale, Kirkby Lonsdale.
 454 R. N. & H. C.—JAMES BATEMAN, Milnthorpe.

Class 401.—Blue Wyandotte Hens or Pullets. [4 entries.]

- 460 I. (30s.)—TOM H. FURNESS, Carlton House, Chesterfield.
 461 II. (20s.)—MRS. W. HOLDSWORTH, St. Jude's Road West, Wolverhampton.
 459 III. (10s.)—J. M. BLACKWOOD, Cranhill Poultry Farm, Street, Somerset.
 458 R. N. & H. C.—JAMES BATEMAN, Milnthorpe.

Class 402.—Wyandotte Cocks or Cockerels, any other variety. [11 entries.]

- 464 I. (30s.)—THOMAS CHARLTON, Kepier Poultry Farm, Crawcrook, Ryton-on-Tyne.
 468 II. (20s.)—JAMES MELLOR, Wyandotte Yards, Wormhill Meadows, Buxton.
 462 III. (10s.)—R. ANTHONY, Home Farm, Buxton, Chorley, Lancs.
 470 R. N. & H. C.—RICHARD WATSON, Thorn Garth, Thackley, Bradford.

Class 403.—Wyandotte Hens or Pullets, any other variety. [6 entries.]

- 477 I. (30s.)—RICHARD WATSON, Thorn Garth, Thackley, Bradford.
 478 II. (20s.)—JOHN WHARTON, Honeycott Farm, Hawes, Yorks.
 473 III. (10s.)—R. ANTHONY, Home Farm, Buxton, Chorley, Lancs.
 474 R. N. & H. C.—W. H. BREWER, Uzella Poultry Park, Lostwithiel.

Class 404.—Buff Orpington Cocks. [15 entries.]

- 487 I (30s., & R. N. for Champion.)—WYNDHAM W. THOMAS, Langdon St. Thomas, Exeter.
 489 II. (20s.)—T. SNELGROVE, Newham Poultry Farm, Addlestone.
 483 III. (10s.)—FRANK BLOOMER, Foxcote, Stourbridge.
 493 R. N. & H. C.—MRS. WILKINSON, Burrow, Scotforth, Lancs.

Class 405.—Buff Orpington Hens. [12 entries.]

- 495 I. (30s.)—R. ANTHONY, Home Farm, Buxton, Chorley, Lancs.
 504 II. (20s.)—S. J. STACEY, 1 Pontanna Road, Canton, Cardiff.
 499 III. (10s.)—J. MARSDEN CHANDLER, Fairfield, Brampton, Chesterfield.
 503 R. N. & H. C.—HENRY STACEY, Corn Stores, Penrhinwells, South Wales.

Class 406.—Buff Orpington Cockerels. [21 entries.]

- 509 I. (30s., & Champion.) & 516 II. (20s.)—MISS LE PATOUREL, Edenstead, Crosby-on-Eden.
 508 III. (10s.)—W. J. GOLDING, Westwood Farm, Weald, Kent.
 515 R. N. & H. C.—THE REV. J. B. NODDER, Ashover Rectory, Chesterfield.

Class 407.—Buff Orpington Pullets. [26 entries.]

- 522 I. (30s.), 541 II (20s.), & 548 III. (10s.)—MISS LE PATOUREL, Edenstead, Crosby-on-Eden.
 539 R. N. & H. C.—MISS N. EDWARDS, Coaley Poultry Farm, Coaley, Glos.

Class 408.—White Orpington Cocks. [15 entries.]

- 558 I. (30s., & Champion.)—W. H. EDWARDS, Brookfield, Pinhoe, Exeter.
 560 II. (20s.)—G. H. PROCTER, Flus House, Durham.
 563 III. (10s.)—MURRAY LINDNER, Ham Court Poultry Farm, Charlton Kings, Cheltenham.
 567 R. N. & H. C.—JOHN HARRINGTON, Sunnyside, Farington Gurney, Bristol.

¹ A Piece of Plate given by the Buff Orpington Club for the best Buff Orpington in Classes 404-407.

² Silver Serviette Ring given by the White Orpington Club for the best Cock or Cockerel in Classes 408 and 410.

cxviii *Award of Poultry Prizes at Bristol, 1913.*

Class 409.—White Orpington Hens. [17 entries.]

- 580 I. (30s.) & Champion.¹)—ALAN T. STOREY, Brook House Farm, Freshfield, Liverpool.
 581 II. (20s.)—CHARLES THELLUSSON, Brodsworth Poultry Farm, Doncaster.
 379 III. (10s.)—MURRAY LINDNER, Ham Court Poultry Farm, Charlton Kings, Cheltenham.
 573 R. N. & H. C.—W. H. EDWARDS, Brookfield, Pinhoe, Exeter.

Class 410.—White Orpington Cockerels. [24 entries.]

- 586 I. (30s.) & R. N. for Champion.²)—I. T. BROWN, Woodlands Poultry Farm, Harrington.
 594 II. (20s.)—W. H. EDWARDS, Brookfield, Pinhoe, Exeter.
 586 III. (10s.)—MISS R. B. BASCOCK, Grange Hill Prize Poultry Yards, Chigwell Row.
 596 R. N. & H. C.—ROBERT L. MOND, Combe Bank, Sundridge, Sevenoaks.

Class 411.—White Orpington Pullets. [26 entries.]

- 625 I. (30s.) & R. N. for Champion.¹) & 631 III. (10s.)—MURRAY LINDNER, Ham Court Poultry Farm, Charlton Kings, Cheltenham.
 613 II. (20s.)—W. & J. CURRAH, Parson Byers Farm, Stanhope.
 630 R. N. & H. C.—ALAN T. STOREY, Brook House Farm, Freshfield, Liverpool.

Class 412.—Black Orpington Cocks. [16 entries.]

- 635 I. (30s.) & Champion.³) & 646 III. (10s.)—W. M. BELL, St. Leonard's Poultry Farm, Ringwood.
 636 II. (20s.)—FRANK BLOOMER, Foxcote, Stourbridge.
 637 R. N. & H. C.—W. B. BONAS, Menham, Atherstone.

Class 413.—Black Orpington Hens. [9 entries.]

- 651 I. (30s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
 657 II. (20s.)—GEORGE E. GUSH, Thackham, Winchfield.
 652 III. (10s.)—MAJOR H. M. BARNES, Stonecroft, Ipswich.
 656 R. N. & H. C.—P. B. GOVETT, Tideford, St. Germans.

Class 414.—Black Orpington Cockerels. [10 entries.]

- 666 I. (30s.)—WILLIAM H. COOK, LTD., Orpington, Kent.
 661 II. (20s.) & 665 III. (10s.)—WALTER BUXTON, Trinity Poultry Farm, Medstead, Alton.
 660 R. N. & H. C.—W. M. BELL, St. Leonard's Poultry Farm, Ringwood.

Class 415.—Black Orpington Pullets. [6 entries.]

- 671 I. (30s.) & R. N. for Champion.³)—E. & F. BURSILL, Poultry Farm, Quainton, Bucks.
 675 II. (20s.) & 673 III. (10s.)—C. SHEPHERD, Opposite Station, Arncliffe, Barnforth.
 672 R. N. & H. C.—A. H. DRYSDALE, Wood Knoll, Lindfield, Haywards Heath.

Class 416.—Spangled Orpington Cocks or Cockerels. [6 entries.]

- 680 I. (30s.)—T. SNELGROVE, Newham Poultry Farm, Addlestone.
 677 II. (20s.)—LAWRENCE BOOTH, Dingle Bank, Chester.
 678 III. (10s.)—WILLIAM H. COOK, LTD., Orpington, Kent.
 679 R. N. & H. C.—ART. C. GILBERT, Swanley, Kent.

Class 417.—Spangled Orpington Hens or Pullets. [1 entries.]

- 683 II. (20s.)—WALTER BUXTON, Trinity Poultry Farm, Medstead, Alton.
 681 III. (10s.)—LESLIE H. BACCHUS, Brooklyn Poultry Farm, Ilfeld, Crawley.
 682 R. N. & H. C.—LAWRENCE BOOTH, Dingle Bank, Chester.

Class 418.—Blue Orpington Cocks, Cockerels, Hens, or Pullets. [19 entries.]

- 690 I. (30s.)—WILLIAM H. COOK, LTD., Orpington, Kent.
 698 II. (20s.), 701 III. (10s.), & 687 R. N. & H. C.—ART. C. GILBERT, Swanley, Kent.

Class 419.—Orpington Cocks or Cockerels, any other colour. [5 entries.]

- 708 I. (30s.)—STAPLEHURST POULTRY FARM, Staplehurst, Kent.
 704 II. (20s.)—WILLIAM H. COOK, LTD., Orpington, Kent.
 707 III. (10s.)—W. HOLMES HUNT, Brook House Poultry Farm, Hellingly, Sussex.
 706 R. N. & H. C.—ART. C. GILBERT, Swanley, Kent.

¹ Silver Serviette Ring given by the White Orpington Club for the best Hen or Pullet in Classes 409 and 411.

² Silver Serviette Ring given by the White Orpington Club for the best Cock or Cockerel in Classes 408 and 410.

³ Special Prize of 10s. given by the Black Orpington Club for the best Black Orpington in Classes 412-415.

Class 420.—Orpington Hens or Pullets, any other colour. [3 entries.]

- 711 I. (30s.)—CHARLES THELLUSON, Brodsworth Poultry Farm, Doncaster.
709 II. (20s.)—WILLIAM H. COOK, LTD., Orpington, Kent.

Class 421.—White Leghorn Cocks or Cockerels. [4 entries.]

- 715 I. (30s.)—MRS. TREVOR WILLIAMS, Clock House Poultry Farm, Byfleet.
712 II. (20s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
714 III. (10s.)—W. E. GILLING, Canal Farm, Bradiord-on-Avon.
713 R. N. & H. C.—C. H. BRITTON, Great Longstone, Derbyshire.

Class 422.—White Leghorn Hens or Pullets. [10 entries.]

- 722 I. (30s.)—ALAN T. STOREY, Brock House Farm, Freshfield, Liverpool.
723 II. (20s.)—MRS. TREVOR WILLIAMS, Clock House Poultry Farm, Byfleet.
717 III. (10s.)—JOSEPH HARDWICK, 170 Overett's Road, Newhall, Burton-on-Trent.
716 R. N. & H. C.—R. ANTHONY, Home Farm, Euxton, Chorley.

Class 423.—Brown Leghorn Cocks or Cockerels. [10 entries.]

- 731 I. (30s.)—ERNEST LL. SIMON, Pembroke.
726 II. (20s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
733 III. (10s.)—L. C. VERREY, The Warren, Oxshott.
729 R. N. & H. C.—R. COWMAN, Siddow, Clitheroe.

Class 424.—Brown Leghorn Hens or Pullets. [12 entries.]

- 745 I. (30s.)—JOHN W. MORTON, Upper Park House, Low Moor, Bradford.
747 II. (20s.)—L. C. VERREY, The Warren, Oxshott.
739 III. (10s.)—F. G. EDWARDS, 2 West Street, Pembroke.
742 R. N. & H. C.—DENYER & IVE, Walton Road, East Molesey.

Class 425.—Black Leghorn Cocks or Cockerels. [10 entries.]

- 751 I. (30s.)—JOSEPH EADSON, Park Villa, Ightenhill, Burnley.
754 II. (20s.)—CLIFFORD WILLISON, Whitechurch, Salop.
750 III. (10s.)—MISS DORIS CAWLEY, Ravenscrag, White Knowle Road, Buxton.
748 R. N. & H. C.—F. S. BENT, Beechwood, Yeovil.

Class 426.—Black Leghorn Hens or Pullets. [9 entries.]

- 762 I. (30s.)—BERT KIRKMAN, Ashfield, Broughton, Preston.
761 II. (20s.) & 760 R. N. & H. C.—CLIFFORD WILLISON, Whitechurch, Salop.
763 III. (10s.)—HARRY HURTLEY, The Poplars, Cottontree Lane, Colne.

Class 427.—Leghorn Cocks or Cockerels, any other colour.

[8 entries.]

- 773 I. (30s.)—ERNEST LL. SIMON, Pembroke.
767 II. (20s.)—A. R. FISH, Holme Mead, Hutton, Preston.
769 III. (10s.)—G. & R. HENLEY, Grandborough, Winslow.
772 R. N. & H. C.—W. ROTHWELL, JUN., Holloway Hill Poultry Farm, Godalming.

Class 428.—Leghorn Hens or Pullets, any other colour.

[9 entries.]

- 778 I. (30s.)—R. S. MARSDEN, Kempleton, Clitheroe.
782 II. (20s.)—R. & J. W. QUIBELL, 9 Church Street, Hooley Hill, Manchester.
783 III. (10s.)—MRS. VERREY, The Warren, Oxshott.
775 R. N. & H. C.—ROBERT CHIFFINDALE, Saltoke, Eilat, Lancaster.

Class 429.—Minorca Cocks or Cockerels. [10 entries.]

- 790 I. (30s.)—R. LOCKER, Gilwern, Abergavenny.
785 II. (20s.)—WILLIAM H. COOK, LTD., Orpington, Kent.
789 III. (10s.)—H. LISTER, Glenholme, Crook.
788 R. N. & H. C.—FURLAND BROTHERS, Bridgwater.

Class 430.—Minorca Hens or Pullets. [16 entries.]

- 803 I. (30s.)—WILLIAM HOLTON, Pantypuddyn, Abertillery.
806 II. (20s.)—H. LISTER, Glenholme, Crook.
799 III. (10s.)—FURLAND BROTHERS, Bridgwater.
805 R. N. & H. C.—A. G. PITTS, Burnham, Somerset.

Class 431.—Dorking Cocks or Cockerels. [14 entries.]

- 811 I. (30s.)—CHARLES AITKENHEAD, Sud Farm, Seaham Harbour.
822 II. (20s.)—ARTHUR C. MAJOR, Ditton, Langley, Bucks.
817 III. (10s.)—RALPH ALTY, Buckshaw Hall, Euxton, Chorley, Lancs.
823 R. N. & H. C.—MRS. WHITTLE, Springfield, Stokesley, Yorks.

Class 432.—Dorking Hens or Pullets. [14 entries.]

- 824 I. (30s.)—RALPH ALTY, Buckshaw Hall, Euxton, Chorley, Lancs.
826 II. (20s.)—ALAN T. STOREY, Brock House Farm, Freshfield, Liverpool.
831 III. (10s.), & 828 R. N. & H. C.—JOHN HARRIS, Greenfield Poultry Yard, Carmarthen.

Class 433.—Red Sussex Cocks. [14 entries.]

- 844 I. (30s., & Champion¹)—SANDERSON BROTHERS, Lower Lodge Poultry Farm, Billingshurst.
847 II. (20s.)—SAUNDERTON POULTRY FARM Bledlow Ridge, Wallingford
850 III. (10s.), & 841 R. N. & H. C.—LORD ROTHSCHILD, Tring Park, Herts

Class 434.—Red Sussex Hens [8 entries.]

- 855 I. (30s. & R. N. for Champion¹), & 858 R. N. & H. C.—LORD ROTHSCHILD, Tring Park Herts.
857 II. (20s.)—FRANK H. WHEELER, Bridge House, Muden, Kent
856 III. (10s.)—DR J. E. SHAW, 23 Caledonia Place, Clifton, Bristol

Class 435.—Red Sussex Cockerels. [6 entries]

- 885 I. (30s.), & 862 II. (20s.)—LORD ROTHSCHILD, Tring Park, Herts
893 III. (10s.)—A. J. FALKENSTEIN, Stockland, Hadlow Down, Sussex.
861 R. N. & H. C.—E. W. & J. B. BUNNEY, Barcombe Poultry Farm, Barcombe, Sussex

Class 436.—Red Sussex Pullets. [7 entries]

- 871 I. (30s.), & 868 III. (10s.)—LORD ROTHSCHILD, Tring Park, Herts.
867 II. (20s.)—A. J. FALKENSTEIN, Stockland, Hadlow Down, Sussex.
872 R. N. & H. C.—MRS. GEORGE WHITELEY, Hamilton House, Downton, Salisbury.

Class 437.—Light Sussex Cocks [5 entries.]

- 876 I. (30s. & R. N. for Champion²)—THE REV. G. A. CRAWSHAY, Melchbourne Vicarage, Sharnbrook.
877 II. (20s.) & 875 III. (10s.)—LORD ROTHSCHILD, Tring Park, Herts.
878 R. N. & H. C.—JOHN BAILY & SON, Heathfield, Sussex.

Class 438.—Light Sussex Hens. [10 entries]

- 881 I. (30s. & Champion²), & 885 II. (20s.)—WILLIAM HODGES, Otlands Farm, Weybridge.
882 III. (10s.)—FRANK H. WHEELER, Bridge House, Marden, Kent
884 R. N. & H. C.—THE REV. G. A. CRAWSHAY, Melchbourne Vicarage, Sharnbrook.

Class 439.—Light Sussex Cockerels [15 entries.]

- 902 I. (30s.)—LORD ROTHSCHILD, Tring Park, Herts.
893 II. (20s.)—A. J. FALKENSTEIN, Stockland, Hadlow Down, Sussex
892 III. (10s.)—THE REV. G. A. CRAWSHAY, Melchbourne Vicarage, Sharnbrook.
888 R. N. & H. C.—JOHN BAILY & SON, Heathfield, Sussex.

Class 440.—Light Sussex Pullets. [15 entries]

- 917 I. (30s.), & 908 R. N. & H. C.—WILLIAM HODGES, Otlands Farm, Weybridge
916 II. (20s.)—LORD ROTHSCHILD, Tring Park, Herts.
909 III. (10s.)—THE REV. G. A. CRAWSHAY, Melchbourne Vicarage, Sharnbrook.

Class 441.—Speckled Sussex Cocks [11 entries]

- 921 I. (30s. & Champion¹)—A. J. FALKENSTEIN, Stockland, Hadlow Down, Sussex.
926 II. (20s.)—JOHN BAILY & SON, Heathfield, Sussex.
928 III. (10s.)—MRS. GEORGE WHITELEY, Hamilton House, Downton, Salisbury
925 R. N. & H. C.—SAUNDERTON POULTRY FARM, Bledlow Ridge, Wallingford.

Class 442.—Speckled Sussex Hens [8 entries]

- 932 I. (30s.)—A. J. FALKENSTEIN, Stockland, Hadlow Down, Sussex.
930 II. (20s.)—S. R. ORR, Hollingbury, Sussex.
931 III. (10s.)—W. H. EDWARDS, Brookfield, Pinhoe, Exeter
934 R. N. & H. C.—SAUNDERTON POULTRY FARM, Bledlow Ridge, Wallingford.

Class 443.—Speckled Sussex Cockerels. [15 entries.]

- 942 I. (30s. & R. N. for Champion¹)—LORD ROTHSCHILD, Tring Park, Herts.
946 II. (20s.)—JOHN BAILY & SON, Heathfield, Sussex
938 III. (10s.), & 944 R. N. & H. C.—E. W. & J. B. BUNNEY, Barcombe, Sussex.

Class 444.—Speckled Sussex Pullets. [16 entries]

- 954 I. (30s.)—A. J. FALKENSTEIN, Stockland, Hadlow Down, Sussex.
953 II. (20s.)—E. W. & J. B. BUNNEY, Barcombe Poultry Farm, Barcombe, Sussex.
956 III. (10s.)—CAPT. & MRS. SPENCER, Dean Lodge, Iron Acton, Bristol.
956 R. N. & H. C.—W. J. GREEN, Poultry Farm, Nailcham.

¹ Silver Serviette Ring given by the Sussex Poultry Club for the best Red Sussex in Classes 433-438.

² Silver Serviette Ring given by the Sussex Poultry Club for the best Light Sussex in Classes 437-440.

³ Silver Serviette Ring given by the Sussex Poultry Club for the best Speckled Sussex in Classes 441-444.

Class 445. *British Rhode Island Red Cocks or Cockerels.*
[38 entries.]

- 1003 I. (30s.)—F. E. MASON, Timbersbrook House, Congleton.
972 II. (20s.)—J. RUSSEL, Halsestead Place, Sevenoaks.
991 III. (10s.)—MRS. WETHERBY WILLIAMS, The Wilderness, Canterbury.
977 R. N. & H. C.—MRS. COOPER, Oulland Hall, Brailsford, Derby.

Class 446. *British Rhode Island Red Hens or Pullets.*
[28 entries.]

- 1007 I. (30s.)—MRS W. B. GOODE, Aldborough Lodge, Boroughbridge.
1031 II. (20s.)—MRS A. I. JONES, Broadway House, Little Hereford, Tenbury.
1014 III. (10s.)—DR. JAMES RUSSELL, The Cedars, Sandhurst.
1011 R. N. & H. C.—A. F. M. STEVENSON, Perryfield, Sollers Hope, Ross.

Class 447. *Ancona Cocks or Cockerels.* [8 entries.]

- 1037 I. (30s.), 1040 II. (20s.), & 1035 III. (10s.)—JOSEPH EADSON, Park Villa, Ightenhill, Burnley.
1041 R. N. & H. C.—THOMAS WHITTAKER, The Laund, Accrington.

Class 448. *Ancona Hens or Pullets.* [8 entries.]

- 1043 I. (30s.), 1049 II. (20s.), & 1048 III. (10s.)—JOSEPH EADSON, Park Villa, Ightenhill, Burnley.
1044 R. N. & H. C.—WILLIAM NELSON, Jumble Holes Bar, Baxenden, Accrington.

Class 449. *Yokohama Cocks or Cockerels.* [14 entries.]

- 1061 I. (30s., & Champion¹), & 1050 II. (20s., & R. N. for Champion¹)—MRS. L. H. BARNARD, The Red House, Wellington College, Berks.
1063 III. (10s.)—E. H. TURRELL, Ide Cottage, Ide Hill, Sevenoaks.
1058 R. N. & H. C.—ROBERT L. MOND, Combe Bank, Sundridge, Sevenoaks.

Class 450. *Yokohama Hens or Pullets.* [9 entries.]

- 1071 I. (30s.), & 1066 II. (20s.)—THE REV. W. SERJEANTSON, Acton Burnell Rectory, Shrewsbury.
1065 III. (10s.) & 1069 R. N. & H. C.—MRS. L. C. PRIDEAUX, Spring Cottage, Lindfield, Haywards Heath.

Class 451. *Brahma Cocks or Cockerels.* [8 entries.]

- 1073 I. (30s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
1080 II. (20s.), & 1075 III. (10s.)—J. C. TOZER, Stoke House, Devonport.
1074 R. N. & H. C.—H. L. POPHAM, Hunstrete House, Pensford, Bristol.

Class 452. *Brahma Hens or Pullets.* [4 entries.]

- 1081 I. (30s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
1083 II. (20s.)—S. W. THOMAS, Glastyn, Forest Fach, Swansea.
1084 III. (10s.), & 1082 R. N. & H. C.—H. L. POPHAM, Hunstrete House, Pensford, Bristol.

Class 453. *Cochin Cocks or Cockerels.*

- 1086 I. (30s.), & 1088 III. (10s.)—GEORGE H. PROCTER, Flax House, Durham.
1089 II. (20s.)—CHARLES THELLUSSON, Brodsworth Poultry Farm, Doncaster.
1085 R. N. & H. C.—MRS. K. CALLARD, Buckfastleigh, Devon.

Class 454. *Cochin Hens or Pullets.*

- 1090 I. (30s.), & 1091 II. (20s.)—G. H. PROCTER, Flax House, Durham.

Class 455. *Maline Cocks or Cockerels.* [12 entries.]

- 1097 I. (30s., & R. N. for Champion¹), & 1094 III. (10s.)—MRS. TERROT, Wishington House, Cookham.
1092 II. (20s.)—F. W. BARTNUM, Waverley Cottage, Hambrook, Bristol.
1093 R. N. & H. C.—MRS. F. HERBERT, Ty-Gwyn, Raglan, Mon.

Class 456. *Maline Hens or Pullets.* [8 entries.]

- 1111 I. (30s., & Champion¹)—CHARLES THELLUSSON, Brodsworth Poultry Farm, Doncaster.
1106 II. (20s.), & 1108 R. N. & H. C.—MRS. TERROT, Wishington House, Cookham.
1107 III. (10s., & Champion²)—MRS. F. HERBERT, Ty-Gwyn, Raglan, Mon.

¹ Silver Medal given by the Yokohama Club for the best Yokohama in Classes 449 and 450.

² Silver Medal given by the Malines Poultry Club for the best Coucou de Maline Cock or Hen in Classes 455 and 456.

³ Silver Medal given by the Malines Poultry Club for the best Maline Cock or Hen other than Coucou in Classes 455 and 456.

Class 457.—Campine Cocks or Cockerels. [17 entries.]

- 1121 I. (30s.) & R. N. for Champion.¹—MISS N. EDWARDS, Coaley Poultry Farm, Coal v. Glos.
1137 II. (20s.)—MRS WINSLOE, Dunsdale, Frodsham, Cheshire.
1113 III. (10s.)—MRS W. E. P. BASTARD, Lynham, Yealmpton, Plymouth.
1126 R. N. & H. C.—THE REV. E. LEWIS JONES, Heyope Rectory, Knighton, Radnorshire

Class 458.—Campine Hens or Pullets. [13 entries.]

- 1137 I. (30s.) & Champion.¹—MRS. W. B. GOODE, Aldborough Lodge, Boroughbridge.
1139 II. (20s.)—LEONARD LUCAS, Lane End House, Shinfield, Reading.
1131 III. (10s.)—JOSEPH EADSON, Park Villa, Ightenhill, Burnley
1139 R. N. & H. C.—MRS W. E. P. BASTARD, Lynham, Yealmpton, Plymouth

Class 459.—Faverolle Cocks or Cockerels. [19 entries]

- 1180 I. (30s.)—CHARLES THELLUSSON, Brodsworth Poultry Farm, Doncaster.
1158 II. (20s.)—W. H. EDWARDS, Brookfield, Pinhoe, Exeter.
1145 III. (10s.) & 1153 R. N. & H. C.—GEORGE BETTS, Goo-trey, Cheshire.

Class 460.—Faverolle Hens or Pullets. [15 entries]

- 1174 I. (30s.), & 1176 II. (20s.)—CHARLES THELLUSSON, Brodsworth Poultry Farm, Doncaster
1168 III. (10s.)—MRS. WINSLOE, Dunsdale, Frodsham, Cheshire.
1164 R. N. & H. C.—GEORGE BETTS, Goo-trey, Cheshire.

Class 461.—Houdan Cocks or Cockerels. [11 entries.]

- 1179 I. (30s.)—S. W. THOMAS, Glasfryn, Forest Fich, Swansea.
1184 II. (20s.)—MRS. C. SQUIRE, Glenwood, Morthoe, Devon.
1178 III. (10s.)—F. LAWFORD STONE, Woodcote, Crookham Hill, Edebridge.
1188 R. N. & H. C.—HENRY EDYE, South Binns, Heathfield, Sussex.

Class 462.—Houdan Hens or Pullets. [9 entries]

- 1192 I. (30s.)—S. W. THOMAS, Glasfryn, Forest Fich, Swansea
1194 II. (20s.)—J. W. MOORE Oakerland Farm, Hexham.
1191 III. (10s.), & 1193 R. N. & H. C.—HENRY EDYE, South Binns, Heathfield, Sussex.

Class 463.—Cocks or Cockerels, any other distinct variety except Bantams.

[21 entries.]

- 1202 I. (30s.)—GEORGE C. DENNIS, Bradford, Barnstaple. (Malay.)
1198 II. (20s.)—ABBOT BROTHERS, Thuxton, Norfolk. (Andalusian.)
1206 III. (10s.)—CHARLES E. PICKLES, Kayfield House, Earby, Colne. (Spangled Hamburg)
1205 R. N. & H. C.—DANIEL JONES, 11 School Street, Williamstown, Penyrhag, Rhondda Valley, Glam. (Aseel.)

Class 464.—Hens or Pullets, any other variety, except Bantams.

[21 entries.]

- 1224 I. (30s.)—R. S. MARSDEN, Kempstone, Olitheroa. (Aseel.)
1233 II. (20s.)—CHARLES E. PICKLES, Kayfield House, Earby, Colne. (Spangled Hamburg)
1230 III. (10s.)—JOHN SMITH, Keythorpe Hall, Leicester. (Black Spanish.)
1227 R. N. & H. C.—FREDERICK PORTER, 17 High Street, Bridgwater. (Andalusian.)

Class 465.—Old English Game Bantam Cocks. [9 entries.]

- 1245 I. (30s.)—R. S. MARSDEN, Kempstone, Olitheroa.
1243 II. (20s.)—J. F. ENTWISLE, The Firs, Calder Grove, Wakefield.
1240 III. (10s.)—MISS R. B. BABCOCK, Grange Hill Prize Poultry Yard, Olngwell Row.
1248 R. N. & H. C.—JOSEPH SEWELL, 3 Mount Pleasant, Throckley, Newburn, Northumberland.

Class 466.—Old English Game Bantam Hens. [13 entries.]

- 1254 I. (30s.)—R. S. MARSDEN, Kempstone, Olitheroa.
1252 II. (20s.)—J. F. ENTWISLE, The Firs, Calder Grove, Wakefield.
1250 III. (10s.)—THE COUNTESS OF CRAVEN, Coombe Abbey, Coventry.
1253 R. N. & H. C.—JOHN MORGAN, Metts Cottage, Ystradgynlais, Glam.

Class 467.—Modern Game Bantam Cocks, any colour. [9 entries.]

- 1264 I. (30s.)—WALTER FIRTH, Read, Blackburn.
1263 II. (20s.)—J. F. ENTWISLE, The Firs, Calder Grove, Wakefield.
1266 III. (10s.)—JOHN HOSKING, 13 Spencer Terrace, Lipson Road, Plymouth.
1269 R. N. & H. C.—MOON BROTHERS, Regent Street, Kingswood, Bristol.

¹ Silver Medal given through the Campine Club for the best Campine in Classes 457 and 458.

Class 468.—Modern Game Bantam Hens, any colour. [6 entries.]

- 1273 I. (30s.)—WALTER FIRTII, Read, Blackburn.
 1272 II. (20s.)—J. F. ENTWISLE, The Fir, Calder Grove, Wakefield.
 1276 III. (10s.)—MISS FREDA MOND, Ooombe Bank, Sundridge, Sevenoaks.
 1271 E. N. & H. C.—W. J. BRINSON, Morning Star Hotel, Pontypool.

Class 469.—Sebright Bantam Cocks. [7 entries.]

- 1281 I. (30s.)—MISS K. D. PRESTON, Bay House, Ellel, Lancaster.
 1278 II. (20s.)—A. R. FISH, Holme Mead, Hutton, Preston.
 1283 III. (10s.)—REV. W. SERJEANTSON, Acton Burnell Rectory, Shrewsbury.

Class 470.—Sebright Bantam Hens. [8 entries.]

- 1284 I. (30s.)—J. R. BENNETT, The Butts, Frome.
 1288 II. (20s.)—MISS K. D. PRESTON, Bay House, Ellel, Lancaster.
 1289 III. (10s.) & 1291 E. N. & H. C.—REV. W. SERJEANTSON, Acton Burnell Rectory, Shrewsbury.

Class 471.—Wyandotte Bantam Cocks. [4 entries.]

- 1293 I. (30s.)—J. F. ENTWISLE, The Fir, Calder Grove, Wakefield.
 1294 II. (20s.)—R. S. MARSDEN, Kempstone, Clitheroe.
 1292 III. (10s.)—R. COWMAN, Siddows, Clitheroe.
 1295 E. N. & H. C.—MRS. I. J. MINNITT, St. Luke's Vicarage, Formby, Liverpool.

Class 472.—Wyandotte Bantam Hens. [6 entries.]

- 1297 I. (30s.) & 1300 III. (10s.)—J. F. ENTWISLE, The Fir, Calder Grove, Wakefield.
 1298 II. (20s.)—A. HAYNES, 5, Stamford Street, Thompson Cross, Stalybridge.
 1299 E. N. & H. C.—R. S. MARSDEN, Kempstone, Clitheroe.

Class 473.—Yokohama Bantam Cocks or Cockerels. [7 entries.]

- 1303 I. (30s. & Champion¹), & 1306 II. (20s. & E. N. for Champion¹)—F. J. S. CHATTERTON, 34 Elm Park Road, Finchley.
 1302 III. (10s.) & 1307 E. N. & H. C.—ERNEST BROWN, Langborough, Wokingham.

Class 474.—Yokohama Bantam Hens or Pullets. [5 entries.]

- 1311 I. (30s.)—R. SCOTT MILLER, Greenock Mill, Broomhouse, Glasgow.
 1309 II. (20s.)—ERNEST BROWN, Langborough, Wokingham.
 1310 III. (10s.) & 1313 E. N. & H. C.—F. J. S. CHATTERTON, 34 Elm Park Road, Finchley.

Class 475.—Japanese Bantam Cocks or Cockerels. [6 entries.]

- 1315 I. (30s.)—ALFRED E. W. DARBY, Adcote, Shrewsbury.
 1314 II. (20s.)—THE HON. MRS. CLIVE BEHRENS, Swin on Grange, Malton.
 1316 III. (10s.) & 1319 E. N. & H. C.—MAJOR G. T. WILLIAMS, Burton Joyce, Nottingham.

Class 476.—Japanese Bantam Hens or Pullets. [7 entries.]

- 1323 I. (30s.) & 1324 III. (10s.)—ALFRED E. W. DARBY, Adcote, Shrewsbury.
 1321 II. (20s.) & 1333 E. N. & H. C.—MAJOR G. T. WILLIAMS, Burton Joyce, Nottingham.

Class 477.—Bantam Cocks, any other variety. [10 entries.]

- 1333 I. (30s.)—CHARLES THELLUSON, Brodsworth Poultry Farm, Doncaster.
 1328 II. (20s.)—J. F. ENTWISLE, The Fir, Calder Grove, Wakefield.
 1330 III. (10s.)—JOHN D. JOHNSTON, Norwood, Albert Avenue, Sedgely Park, Prestwich, Lancs.
 1335 E. N. & H. C.—P. W. SYMONS, Whitnun Farm, Lew Down, Devon.

Class 478.—Bantam Hens, any other variety. [10 entries.]

- 1338 I. (30s.)—J. F. ENTWISLE, The Fir, Calder Grove, Wakefield.
 1340 II. (20s.)—JOHN D. JOHNSTON, Norwood, Albert Avenue, Sedgely Park, Prestwich, Lancs.
 1345 III. (10s.)—CHARLES THELLUSON, Brodsworth Poultry Farm, Doncaster.
 1342 E. N. & H. C.—HENRY J. SEALY, 68 Bath Road, Bridgwater.

Class 479.—Aylesbury Drakes or Ducks, bred prior to 1913.

[4 entries.]

- 1347 I. (30s.)—WILLIAM BYGOTT, Wing, Oakham.
 1348 II. (20s.)—JAMES HUNTLY & SON, Hirsal Poultry Farm, Coldstream.
 1350 III. (10s.)—A. F. ROWE, 49 Fore Street, Bovey Tracey.

Class 480.—Aylesbury Drakes or Ducks, bred in 1913. [7 entries.]

- 1352 I. (30s.)—THE REV. J. HEWETSON, Beelby Vicarage, Rowsley, Derby.
 1353 II. (20s.)—JAMES HUNTLY & SON, Hirsal Poultry Farm, Coldstream.
 1351 III. (10s.)—WILLIAM BYGOTT, Wing, Oakham.
 1357 E. N. & H. C.—ARTHUR C. SMITH, Lower Burytown, Blunsdon, Highworth, Wilt.

¹ Silver Medal given by the Yokohama Club for the best Yokohama Bantam in Classes 473 and 474.

Class 481.—Rouen Drakes or Ducks, bred prior to 1913. [5 entries.]

- 1358 I. (30s.)—RALPH ALTY, Buck-haw Hall, Ruxton, Chorley, Lancs.
 1359 II. (20s.)—R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.
 1360 III. (10s.)—WILLIAM BYGOTT, Wing, Oakham.
 1361 R. N. & H. C.—WILLIAM BRENT, Clampit Farm, Callington, Cornwall.

Class 482.—Rouen Drakes or Ducks, bred in 1913. [6 entries.]

- 1365 I. (30s.)—F. W. MYHILL, The Red House, Hethel, Norwich.
 1366 II. (20s.) & 1364 R. N. & H. C.—WILLIAM BYGOTT, Wing, Oakham.
 1363 III. (10s.)—WILLIAM BRENT, Clampit Farm, Callington, Cornwall.

Class 483.—Blue Orpington Drakes or Ducks, bred prior to 1913.

[3 entries.]

- 1370 I. (30s.)—TOM H. FURNESS, Carlton House, Chesterfield.
 1369 II. (20s.)—MISS ALLIN, Woolaston, Loddiswell, Devon.
 1371 III. (10s.)—ART. C. GILBERT, Swanley, Kent.

Class 484.—Blue Orpington Drakes or Ducks, bred in 1913. [5 entries.]

- 1373 I. (30s.)—MISS ALLIN, Woolaston, Loddiswell, Devon.
 1374 II. (20s.)—MRS. W. E. P. BASTARD, Lyneham, Yealmpton, Plymouth.
 1375 III. (10s.)—WILLIAM BYGOTT, Wing, Oakham.
 1376 R. N. & H. C.—TOM H. FURNESS, Carlton House, Chesterfield.

Class 485.—Buff Orpington Drakes or Ducks, bred prior to 1913. [6 entries.]

- 1377 I. (30s., & Champion.¹)—TOM H. FURNESS, Carlton House, Chesterfield.
 1378 II. (20s.)—JAMES HUNTLY & SON, Hirsal Poultry Farm, Coldstream.
 1382 III. (10s.)—STANLEY STREET, The Manor, Ooveney, Cambs.
 1379 R. N. & H. C.—WILLIAM G. KINGWELL, Dartmoor Poultry Farm, South Brent.

Class 486.—Buff Orpington Drakes or Ducks, bred in 1913. [10 entries.]

- 1391 I. (30s., & R. N. for Champion.¹)—A. F. M. STEVENSON, Perryfield, Solihull, Hope, Ross, Herefordshire.
 1384 II. (20s.)—MRS. E. CALLARD, Buckfastleigh, Devon.
 1385 III. (10s.)—JAMES HUNTLY & SON, Hirsal Poultry Farm, Coldstream.
 1390 R. N. & H. C.—LORD ROTHSCHILD, Tring Park, Herts.

Class 487.—Drakes or Ducks, any other breed, bred prior to 1913.

[10 entries.]

- 1401 I. (30s.), & 1397 R. N. & H. C.—WILLIAM G. KINGWELL, Dartmoor Poultry Farm, South Brent, Devon. (Indian Runner.)
 1394 II. (20s.)—R. C. P. BRADSHAW, Tinwell, Stamford. (Pekin Drake.)
 1393 III. (10s.)—MISS ALLIN, Woolaston, Loddiswell, Devon. (Indian Runner.)

Class 488.—Drakes or Ducks, any other breed, bred in 1913. [3 entries.]

- 1405 I. (30s.), & 1403 III. (10s.)—WILLIAM G. KINGWELL, Dartmoor Poultry Farm, South Brent, Devon. (Indian Runner.)
 1404 II. (20s.)—JAMES LONGSON & SON, Buxton Road, Chapel-en-le-Frith. (Pekin.)

Class 489.—Ganders, any variety. [7 entries.]

- 1409 I. (30s.)—WILLIAM BYGOTT, Wing, Oakham. (Toulouse.)
 1407 II. (20s.), & 1410 R. N. & H. C.—WILLIAM F. SNELL, Marsh Farm, Yeovil. (Toulouse.)
 1406 III. (10s.)—ABBOT BROTHERS, Thuxton, Norfolk.

Class 490.—Geese, any variety. [3 entries.]

- 1414 I. (30s.)—WILLIAM BYGOTT, Wing, Oakham. (Kimbden.)
 1413 II. (20s.)—ABBOT BROTHERS, Thuxton, Norfolk.
 1415 III. (10s.)—WILLIAM F. SNELL, Marsh Farm, Yeovil. (Kimbden.)

Class 491.—Turkey Cocks, [11 entries.]

- 1416 I. (30s.)—ABBOT BROTHERS, Thuxton, Norfolk.
 1420 II. (20s.)—EDWARD KENDRICK, Weeford House, Lichfield.
 1417 III. (10s.)—THOMAS ABBOT, Wymondham, Norfolk.
 1419 R. N. & H. C.—GAGE HARPER, Mason's Bridge Farm, Raydon, Ipswich.

Class 492.—Turkey Hens. [10 entries.]

- 1427 I. (30s.)—ABBOT BROTHERS, Thuxton, Norfolk.
 1423 II. (20s.)—MRS. G. MILNES, Stanway Manor, Church Stretton.
 1426 III. (10s.)—THOMAS ABBOT, Wymondham, Norfolk.
 1424 R. N. & H. C.—HERBERT E. WENDEN, Lower Farm, Lawford, Manningtree.

¹ A Special Prize of 10s. 6d. given by the Orpington Duck Club for the best Buff Orpington Drake or Duck in Classes 485 and 488.

FARM AND DAIRY PRODUCE OF THE UNITED KINGDOM.

Butter.

Class 493.—*Boxes of Twelve 2-lb. Rolls or Squares of Butter, made with not more than 1 per cent. of salt.* [1 entry.]

1 I. (£4).—CHARLES PRIDEAUX, The Grange, Motcombe, Dorset.

Class 494.—*Two Pounds of Fresh Butter, without any salt, made up in plain pounds from the milk of Channel Island, Devon, or South Devon Cattle and their crosses.* [24 entries]

13 I. (£4).—MRS. L. R. MILDON, Higher Mead Down, Rackenford, Devon.

24 II. (£2).—MRS. JOHN WAY, West Bridge, Bishopscynmpton, South Molton.

10 III. (£1).—MRS. JOHN H. HEARN, Sydenham Damarel, Tavistock.

21 R. N. & H. C.—MRS. R. UNDERWOOD, Wards Coombe, Little Gaddesden, Berkhamsted.

Class 495.—*Two Pounds of Fresh Butter, without any salt, made up in plain pounds from the milk of Cattle of any breed or cross other than those mentioned in Class 494.* [21 entries.]

42 I. (£4).—MRS. M. STOKES, Heddon House Dairy, Wylam-on-Tyne.

26 II. (£2).—MRS. GEORGE ADLAM, Bubwith Farm, Wookey Hole, Wells.

38 III. (£1).—MRS. OXENHAM, Burntown, Tavistock.

46 R. N. & H. C.—JOHN H. WALKER, Whittock, End, Much Marcle, Dymock.

Class 496.—*Two Pounds of Fresh Butter, slightly salted, made up in plain pounds from the milk of Channel Island, Devon, or South Devon Cattle and their crosses.* [32 entries.]

76 I. (£4).—MRS. JOHN WAY, West Bridge, Bishopscynmpton, South Molton.

63 II. (£2).—MRS. L. R. MILDON, Higher Mead Down, Rackenford, Devon.

78 III. (£1).—MRS. R. UNDERWOOD, Wards Coombe, Little Gaddesden, Berkhamsted.

61 R. N. & H. C.—MORTON HILES, Henford, Warminster.

Class 497.—*Two Pounds of Fresh Butter, slightly salted, made up in plain pounds from the milk of Cattle of any breed or cross other than those mentioned in Class 496.* [24 entries.]

92 I. (£4).—MRS. OXENHAM, Burntown, Tavistock.

79 II. (£2).—MRS. GEORGE ADLAM, Bubwith Farm, Wookey Hole, Wells.

98 III. (£1).—MRS. M. STOKES, Heddon House Dairy, Wylam-on-Tyne.

83 R. N. & H. C.—PETER FRAYNE, Coxley, near Wells.

Class 498.—*Two Pounds of Butter, made from scalded cream.* [16 entries.]

117 I. (£4).—MRS. JOHN WAY, West Bridge, Bishopscynmpton, South Molton.

112 II. (£2).—MRS. OXENHAM, Burntown, Tavistock.

111 III. (£1).—MRS. L. R. MILDON, Higher Mead Down, Rackenford, Devon.

108 R. N. & H. C.—MRS. JOHN H. HEARN, Sydenham Damarel, Tavistock.

Class 499.—*Three Pounds of Fresh Butter, slightly salted, made up in pounds in the most attractive marketable designs.* [7 entries.]

122 I. (£4).—MRS. L. R. MILDON, Higher Mead Down, Rackenford, Devon.

124 II. (£2).—GEORGE VENNING, Langunnet Barton, Lerryn, Lostwithiel.

120 III. (£1).—COL. R. C. HARE, Reymerton Hall, Attleborough.

119 R. N. & H. C.—MRS. A. A. BERE, Stoodleigh Barton, Tiverton.

Class 500.—*Three Pounds of Fresh Butter, slightly salted, made up in pounds, and packed in non-returnable boxes for transmission by rail or parcel post.* [10 entries.]

130 I. (£4).—VISCOUNT PORTMAN, Bryanston, Blandford.

129 II. (£2).—MRS. L. R. MILDON, Higher Mead Down, Rackenford, Devon.

135 III. (£1).—MRS. JOHN WAY, West Bridge, Bishopscynmpton, South Molton.

132 R. N. & H. C.—MRS. R. UNDERWOOD, Wards Coombe, Little Gaddesden, Berkhamsted.

Cheese.

Made in 1913.

Class 501.—Three Cheddar Cheeses, of not less than 50 lb. each.

[15 entries.]

- 147 I. (£5.)—ALEXANDER CROSS, Knockdon Farm, Maybole.
 149 II. (£3.)—ROBERT STEVENSON, Boghead, Galston, Ayrshire.
 140 III. (£2.)—W. BARRON, Caigton, Castle Douglas
 144 R. N. & H. C.—C. CHANT, Well Farm, Alford, Castle Cary

Class 502.—Three Cheddar Truckles. [37 entries.]

- 200 I. (£4.)—ROBERT STEVENSON, Boghead, Galston, Ayrshire.
 200 II. (£3.)—E. E. HODGES, Crowfield Farm, Easton, Wells.
 195 III. (£1.) P. H. FRANCIS, Folly Farm, Upton Noble, Bruton.
 202 R. N. & H. C.—T. LYONS, Harptree Farm, East Harptree, Bristol.

Class 503.—Three Coloured Cheshire Cheeses, not less than 40 lb. each.

[21 entries.]

- 228 I. (£5.)—W. H. HOBSON, Gonley Farm, Blakenhall, Nantwich.
 230 II. (£3.)—F. A. MOORE, The Grange Farm, Cheekley, Nantwich.
 234 III. (£2.)—SAMUEL DUTTON, Oak Farm, Haughton, Tarporley.
 237 R. N. & H. C.—R. P. WALLEY, Cotton Abbotts, Waverton, Chester.

Class 504.—Three Uncoloured Cheshire Cheeses, not less than 40 lb. each.

[15 entries.]

- 248 I. (£5.)—THOMAS MOTTERSHEAD, Wain House, Wem, Salop.
 251 II. (£3.)—H. S. WALLEY, Bickerton Hall, Malpas.
 249 III. (£2.)—CHARLES PRICE, Onston, Ellesmere.
 243 R. N. & H. C.—MRS C. A. GOODWIN, Aston Hill Farm, Stone, Staffs.

Class 505.—Three Double Gloucester Cheeses, not less than 22 lb. each.

[25 entries.]

- 273 I. (£5.)—A. STONE & SON, Hurlingpot, Doulting, Shepton Mallet.
 256 II. (£3.)—THE CHEDDAR VALLEY DAIRY CO., LTD., Rookbridge, Axbridge.
 258 III. (£2.)—T. ELTON, Baddon, Shepton Mallet.
 275 R. N. & H. C.—ARTHUR WARREN, Symes Dairy, North Perrott, Crewkerne.

Class 506.—Three Single Gloucester Cheeses, not less than 13 lb. each.

[15 entries.]

- 289 I. (£4.)—ARTHUR WARREN, Symes Dairy, North Perrott, Crewkerne.
 290 II. (£2.)—H. J. VEEDEN, Walpton Dairy, Dorchester.
 287 III. (£1.)—MRS L. H. SHIELD, Alkington Farm, Berkeley, Glo.
 292 R. N. & H. C.—MISS R. L. WHERRETT, Hope House Farm, Cambridge, Stonehouse.

Class 507.—Three North Wiltshire Truckles. [3 entries.]

- 294 I. (£4.)—P. H. FRANCIS, Folly Farm, Upton Noble, Bruton.

Class 508.—Three Stilton Cheeses. [10 entries.]

- 303 I. (£4.)—HENRY MORRIS, Manor Farm, Saxelbye, Melton Mowbray.
 304 II. (£2.)—SCALFORD DAIRY, LTD, Scalford, Melton Mowbray.
 297 III. (£1.)—BELVOIR VALE DAIRIES, Harby, Melton Mowbray.
 300 R. N. & H. C.—JOSEPH HALL, Stathern, Melton Mowbray.

Class 509.—Three Wensleydale Cheeses, Stilton Shape. [7 entries.]

[No award.]

Class 510.—Three Caerphilly Cheeses. [22 entries.]

- 323 I. (£4.)—H. M. HICKS, Southfield Farm, Brean, Burnham.
 324 II. (£2.)—E. E. HODGES, Crowfield Farm, Easton, Wells.
 334 III. (£1.)—GEORGE TUCKER, The Farm, Mudgley, Wedmore, Weston-super-Mare.
 318 R. N. & H. C.—EDWARD DIBBLE, Brean, Burnham, Somerset.

Cider and Perry.

N.B.—The names of the Fruits from which the Cider or Perry is stated by the Exhibitor to have been made are added after the address of the Exhibitor. In Classes 513, 514, and 518 the date of making is also given.

Class 511.—Casks of Dry Cider, of not less than 9, and not more than 18 gallons, made in 1912. [16 entries.]

- 340 I. (£4.)—HERBERT J. DAVIS, Goldsborough House, Sutton Montis, Sparkford, Somerset. (Royal and White Jersey, Dove, Davis's Favourite, and Cup of Liberty.)

- 342 II. (£2).—PULLIN BROS., Compton Greenfield, Bristol. (Kingston Black and Mixed Fruit.)
 348 III. (£1).—JOHN BEARNS & CO., Bridgetown Stores, Tolnes. (Mixed Fruit.)
 350 R. N. & H. C. VICKERY BROS., West Somerset Cyder Works, Taunton. (Mixed Fruit.)

Class 512.—*Casks of Sweet Cider, of not less than 9, and not more than 18 gallons, made in 1912.* [19 entries.]

- 353 I. (£4).—W HENRY BATTING, St Cyres, Exeter. (Sweet Alfred, Slack Me Gndle, Hang Down, and Jersey Bitter Sweet.)
 365 II. (£2), & 366 R. N. & H. C.—THOMAS STONE, Axe Vale Cider Works, Axminster. (Mixed Fruit.)
 369 III. (£1).—VICKERY BROS., West Somerset Cyder Works, Taunton. (Kingston Black and Mixed Fruit.)

Class 513.—*Casks of Cider, of not less than 9, and not more than 18 gallons, made before 1912.* [8 entries.]

- 378 I. (£4).—HENRY WHITEWAY & CO., LTD, The Orchards, Whimble, Devon. (Mixed Fruit, 1911.)
 371 II. (£2).—THE CO. ARMAGH CIDER COMPANY, Portadown. (Mixed Fruit, 1910.)
 375 III. (£1).—RIDLER & SON, Clehonger Manor Farm, Hereford. (Mixed Fruit, 1911.)

Class 514.—*One Dozen Bottles of Dry Cider, made in 1912.*

[20 entries.]

- 387 I. (£4).—PULLIN BROS., Compton Greenfield, Bristol. (Kingston Black and Mixed Fruit.)
 379 II. (£2), & 381 R. N. & H. C.—SIR JOHN AMORY, BT, Knightshayes Court, Tiverton. (Mixed Fruit.)
 392 III. (£1).—THOMAS STONE, Axe Vale Cider Works, Axminster. (Mixed Fruit.)

Class 515.—*One Dozen Bottles of Sweet Cider, made in 1912.*

[31 entries.]

- 399 I. (£4, & Champion.¹)—SIR JOHN AMORY, BT, Knightshayes Court, Tiverton. (Mixed Fruit.)
 415 II. (£2).—PULLIN BROS., Compton Greenfield, Bristol. (Kingston Black and Mixed Fruit.)
 421 III. (£1).—TILLEY BROS., Shepton Mallet. (Horner, White Jersey, and Kingston Black.)
 408 R. N. & H. C.—HERBERT J. DAVIS, Goldborough House, Sutton Montn, Sparkford, Somerset. (Harry Master, White Jersey, Horner, and Kingston Black.)

Class 516.—*One Dozen Bottles of Cider, made before 1912.*

[17 entries.]

- 438 I. (£4, & R. N. for Champion.¹)—RIDLER & SON, Clehonger Manor Farm, Hereford. (Kingston Black, 1911.)
 440 II. (£2).—PHILIP WILCOX, Nupdown Farm, Thornbury, Glos. (Kingston Black, 1911.)
 442 III. (£1).—TILLEY BROS., Shepton Mallet. (Horner, White Jersey and Kingston Black, 1911.)
 445 R. N. & H. C.—HENRY WHITEWAY & CO., LTD, The Orchards, Whimble, Devon. (Mixed Fruit, 1911.)

Class 517.—*One Dozen Bottles of Dry Perry.* [3 entries.]

[No Award.]

Class 518.—*One Dozen Bottles of Sweet Perry.* [9 entries.]

- 460 I. (£4).—TILLEY BROS., Shepton Mallet. (Oldfield and Butts, 1912.)
 459 II. (£2).—TILLEY BROS. (Oldfield, 1912.)
 463 III. (£1).—DANIEL PHELPS & SON, Tibberton, Gloucester. (Huff Cap and Oldfield, 1911.)
 454 R. N. & H. C.—THE QUANTOCK VALE CIDER CO., LTD, North Potherton, Bridgwater. (Butts, 1912.)

Wool.

Of 1913 Clip.

Class 519.—*Three Fleeces of Oxford Down Wool.²*

[2 entries.]

- 461 I. (£3).—JOHN BRYAN, Southleigh, Witney, Oxon. (Ewes.)
 462 II. (£2).—HUGH W. STILGON, The Grounds, Adderbury, Banbury. (Yearling Ewe Hoggs.)

¹ Challenge Cup given by the Cider Growers of the West of England for the best exhibit in Classes 511-516.

² Prizes given by the Oxford Down Sheep Breeders' Association.

Class 520.—*Three Fleeces of Southdown Wool*.¹ [10 entries.]

- 464 I. (£3.)—SIR JEREMIAH COLMAN, BT Gilton Park, Surrey (Yearling Sheep)
 473 II. (£2.)—THE EARL OF SUFFOLK AND BERKSHIRE, Charlton Park, Malmesbury (Ewe)
 470 III. (£1.)—W. F. RUDWICK, Cackham Tower, West Wittering, Chichester (Yearling Hogg).

Class 521.—*Three Fleeces of Suffolk Wool*.² [6 entries.]

- 474 I. (£3.)—A. H. COBBALD, Eldo House, Bury St Edmunds. (Yearling Sheep.)
 473 II. (£2.)—ROBERT BURRELL, Westley Hall, Bury St Edmunds (Yearling Ewe.)
 478 III. (£3.)—HERBERT E. SMITH, The Grange, Walton, Suffolk. (Yearling Ewe.)

Class 522.—*Three Fleeces of any Long Wool*. [17 entries.]

- 483 I. (£5.)—SIR EVERARD A. HAMBRO, K.C.V.O., Milton Abbey, Blandford (Dorset Horn Hogg.)
 494 II. (£3.)—DAVID J. THOMAS, Talachddu, Brocon (Ryeland Ewe.)
 496 III. (£2.)—COL THOMAS WOOD, Gwernylod, Three Cocks, Breconshire. (Kerry Hill (Wales) Shearing Sheep.)

Class 523.—*Three Fleeces of Wensleydale Blue-Faced Wool*.³ [7 entries.]

- 496 I. (£3.)—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale. (Ewe Hogg.)
 502 II. (£2.)—THE EXORS. OF THE LATE THOMAS WILLIS, Minor House, Carperby, Yorks. (Yearling Hogg.)
 499 III. (£1.)—R. H. MILNER, Mowbrick, Hest Bank, Lancaster. (Yearling Hogg.)

Class 524.—*Three Fleeces of Kent or Romney Marsh Wool*.⁴ [15 entries.]

- 512 I. (£3.)—ROBERT KENWARD, Udimore, Rye. (2-year Hogg.)
 514 II. (£2.)—FREDERICK NEAME, Macknade, Faversham (Yearling Ewe.)
 517 III. (£1.)—WALTER F. WOOD, Cheke Court, Sittingbourne (Yearling Hogg.)
 510 R. N. & H. C.—C. E. GUNTHER, Tongswood, Hawkhurst, Kent.

Class 525.—*Three Fleeces of any Long Wool*. [13 entries.]

- 528 I. (£5.)—J. EGERTON QUESTED, The Firs, Chertton, Kent. (Kent or Romney Marsh Two Shear Wethers.)
 527 II. (£3.)—THE EXORS. OF THE LATE CAPTAIN MOORE, Sittingbourne. (Kent or Romney Marsh Two Shear Wethers.)
 526 III. (£2.)—ROBERT KENWARD, Udimore, Rye (Kent or Romney Marsh Two Shear Wethers.)

Class 526.—*Three Fleeces of Exmoor Wool*.⁵ [2 entries.]

- 531 I. (£3.)—PERCY SMYTH, Broford, Dulverton. (Yearling Sheep.)
 532 II. (£2.)—D. J. TAPP, Highercombe, Dulverton. (2-year Wethers.)

Class 527.—*Three Fleeces of Mountain or Moorland Wool, comprising Dartmoor, Exmoor, Herdwick, Welsh and Black-faced Mountain*. [7 entries.]

- 539 I. (£5.)—D. J. TAPP, Highercombe, Dulverton. (Exmoor Yearling Ewe.)
 534 II. (£3.)—H. O. ELLIS, Tyhendre, Bangor. (Welsh Mountain Yearling Wethers.)
 537 III. (£2.)—W. G. ROBERTS, Dyweth Hall, Dyweth, Flint. (Welsh Mountain Ewe.)
 536 R. N. & H. C.—JOSEPH L. GRATTON, Fron Haul Farm, Dyweth Road, Rhyl. (Welsh Mountain Yearling Sheep.)

HIVES, HONEY, AND BEE APPLIANCES.

Class 528.—*Collections of Hives and Appliances*. [5 entries.]

- 542 I. (£4.)—J. LEE & SON, George Street, Uxbridge.
 543 II. (£2.)—W. F. MEADOWS, Syston, Leicester.
 544 III. (£1.)—E. H. TAYLOR, Welwyn, Herts.
 540 R. N. & H. C.—R. BROWN & SON, Flora Apiary, Somersham, Hants.

Class 529.—*Frame Hives, for general use, unpainted*. [8 entries.]

- 549 I. (20s.)—J. LEE & SON, George Street, Uxbridge.
 552 II. (15s.)—E. H. TAYLOR, Welwyn, Herts.
 547 III. (10s.)—J. P. CURTIS, High Street, Weston-super-Mare.
 545 R. N. & H. C.—R. BROWN & SON, Flora Apiary, Somersham, Hants.

¹ Prizes given by the Southdown Sheep Society² Prizes given by the Suffolk Sheep Society.³ Prizes given by the Wensleydale Blue-faced Sheep Breeder's Association.⁴ Prizes given by the Kent or Romney Marsh Sheep Breeder's Association.⁵ Prizes given by the Exmoor Horn Sheep Breeders' Society.

Class 530.—Frame Hives, for Cottager's use, unpainted. [4 entries.]

- 550 I. (20s.)—E. H. TAYLOR, Welwyn, Herts.
 551 II. (15s.)—J. LEE & SON, George Street, Uxbridge.
 555 III. (10s.)—W. P. MEADOWS, Synton, Leicester.
 553 R. N. & H. C.—R. BROWN & SON, Flora Apiary, Somersham, Hunts.

Class 531.—Honey Extractors. [5 entries.]

- 558 I. (15s.)—W. P. MEADOWS, Synton, Leicester.
 557 II. (10s.)—R. BROWN & SON, Flora Apiary, Somersham, Hunts.
 561 Certificate of Merit.—R. H. TAYLOR, Welwyn, Herts.

Class 532.—Observatory Hives, with not less than three Brood Combs, with Bees and Queen. [2 entries.]

- 562 II. (15s.)—R. BROWN & SON, Flora Apiary, Somersham, Hunts.

Class 533.—Any appliances connected with Bee-keeping, to which no prize has been awarded at a Show of the R.A.S.E. [7 entries.]
 [No Award.]

Class 534.—Comb Honey.¹ [4 entries.]

- 573 I. (10s.)—G. W. KIRBY, 17 Priory Road, Knowle, Bristol.
 574 II. (7s. 6d.)—J. SPILLER, 7, St. George's Terrace, Taunton.
 572 Certificate of Merit.—H. KINGSTON, Whitechurch, Bristol.

Class 535.—Extracted Light-coloured Honey. [3 entries.]

- 576 I. (10s.)—F. G. HALES, Post Office, Welton, Bath.
 577 II. (7s. 6d.)—G. W. KIRBY, 17 Priory Road, Knowle, Bristol.
 578 Certificate of Merit.—H. KINGSTON, Whitechurch, Bristol.

Class 536.—Collective Exhibits of Four Sections of Comb Honey: Four Jars of Extracted Light Coloured Honey, Four Jars of Extracted Medium or Dark Coloured Honey, Four Jars of Granulated Honey, and 1 lb. Bees Wax. [2 entries.]

- 579 I. (20s.)—G. W. KIRBY, 17 Priory Road, Knowle, Bristol.
 578 II. (10s.)—H. KINGSTON, Whitechurch, Bristol.

Class 537.—Comb Honey.² [7 entries.]

- 585 I. (20s.)—J. PEARMAN, Penny Long Lane, Derby.
 584 II. (15s.)—J. G. NICHOLSON, The Apiary, Langwathby.
 586 III. (10s.)—H. W. TAYLOR, Earle Croome, Worcester.
 581 R. N. & H. C.—T. A. DENNISON, The Laurels, Stockton, Rugby.

Class 538.—Extracted Light-coloured Honey. [10 entries.]

- 594 I. (20s.)—J. PEARMAN, Penny Long Lane, Derby.
 589 II. (15s.)—D. H. BURGESS, Elworth, Sandbach.
 596 III. (10s.)—THE STUDLEY HORTICULTURAL COLLEGE, Studley Castle, Warwickshire.
 595 R. N. & H. C.—W. SHUKER, Middleton, Scriven, Bridgenorth.

Class 539.—Extracted Medium or Dark-coloured Honey. [6 entries.]

- 601 I. (20s.)—J. PEARMAN, Penny Long Lane, Derby.
 598 II. (15s.)—W. B. ALLISTER, Throckenholt, Wisbech.
 590 III. (10s.)—J. BERRY, The Apiary, Llanrwst.
 597 R. N. & H. C.—W. H. ALLARD, Pears Plot Farm, Stockton, Rugby.

Class 540.—Granulated Honey. [5 entries.]

- 607 I. (20s.)—J. WOODS, 10 Church Warsop, Mansfield.
 606 II. (15s.)—J. PEARMAN, Penny Long Lane, Derby.
 605 III. (10s.)—T. MARSHALL, Ivy Cottage, Sutton-on-Trent, Newark.
 603 R. N. & H. C.—D. H. BURGESS, Elworth, Sandbach.

Class 541.—Comb Honey.³ [9 entries.]

- 610 I. (20s.)—R. BROWN & SON, Flora Apiary, Somersham, Hunts.
 618 II. (15s.)—A. YOUNG, East Street, Osham.
 608 III. (10s.)—MISS M. BARNARDISON, The Ryes, Sudbury, Suffolk.
 609 R. N. & H. C.—A. D. BOULDEN, Boughton Monchelsea, Maidstone.

¹ Entries in Classes 534-536 can only be made by Members of the Somersetshire Beekeepers' Association.

² Entries in Classes 537-540 can only be made by residents in Cheshire, Cumberland, Derbyshire, Durham, Herefordshire, Lancashire, Leicestershire, Lincolnshire, Monmouthshire, Northumberland, Nottinghamshire, Rutland, Shropshire, Staffordshire, Warwickshire, Westmorland, Worcestershire, Yorkshire, the Isle of Man, Ireland, Scotland, or Wales.

³ Entries in Classes 541-544 can only be made by residents in Bedfordshire, Berkshire, Buckinghamshire, Cambridgeshire, Cornwall, Devon, Dorset, Essex, Gloucestershire, Hampshire, Hertfordshire, Huntingdonshire, Isle of Wight, Kent, Middlesex, Norfolk, Northamptonshire, Oxfordshire, Somerset, Suffolk, Surrey, Sussex, or Wiltshire.

Class 542.—*Extracted Light-coloured Honey.* [9 entries.]

- 624 I. (20s.)—S. G. S. LEIGH, The Nurseries, Broughton, Hants.
 617 II. (15s.)—A. H. BOWEN, Coronation Road, Cheltenham.
 623 III. (10s.)—G. W. KIRBY, 17 Priory Road, Knowle, Bristol.
 618 R. N. & H. C.—R. BROWN & SON, Flora Apiary, Somersham, Hants.

Class 543.—*Extracted Medium or Dark-coloured Honey.* [6 entries.]

- 626 I. (20s.)—C. E. BILLSON, Cranford, Kettering.
 631 II. (15s.)—A. McCULLAGH, Webberton, Dunchideock, Exeter.
 629 III. (10s.)—A. L. C. FELL, Longwall, Walton-on-Thames.
 630 R. N. & H. C.—G. W. KIRBY, 17 Priory Road, Knowle, Bristol.

Class 544.—*Granulated Honey.* [4 entries.]

- 635 I. (20s.)—W. TUCKER, Jump, High Bickington, Umberleigh, Devon.
 633 II. (15s.)—R. HOLBOROW, Long Street, Tetbury, Glos.
 632 III. (10s.)—R. BROWN & SON, Flora Apiary, Somersham, Hants

Class 545.—*Shallow Frames of Comb Honey, for extracting.* [10 entries.]

- 641 I. (20s.)—F. G. HALES, Post Office, Wellow, Bath.
 645 II. (15s.)—H. W. TAYLOR, Earl Croome, Worcester.
 637 III. (10s.)—A. D. BOULDEN, Boughton Monchelsea, Maidstone.
 638 R. N. & H. C.—R. BROWN & SON, Flora Apiary, Somersham, Hants.

Class 546.—*Heather Honey.* [5 entries.]

- 647 I. (20s.)—W. DIXON, 27 Central Road, Leeds.
 646 II. (15s.)—J. BERRY, The Apiary, Llanrwst.
 648 III. (10s.)—M. LAMBOLL, Chiddingfold, Surrey.
 649 R. N. & H. C.—J. PEARMAN, Penny Long Lane, Derby.

Class 547.—*Heather Mixture Extracted Honey.* [7 entries.]

- 654 I. (20s.)—M. LAMBOLL, Chiddingfold, Surrey.
 657 II. (15s.)—C. E. SMITH, 5 Grayfield Place, Sutton-in-Ashfield.
 651 III. (10s.)—J. BERRY, The Apiary, Llanrwst.
 652 R. N. & H. C.—W. DIXON, 27 Central Road, Leeds.

Class 548.—*Best and Most Attractive Displays of Honey.*
 [3 entries.]

- 660 I. (30s.)—J. PEARMAN, Penny Long Lane, Derby.
 658 II. (20s.), & 659 III. (10s.)—R. BROWN & SON, Flora Apiary, Somersham, Hants.

Class 549.—*Exhibits of not less than 2 lb. of Beeswax, the Produce of the Exhibitor's Apiary.* [8 entries.]

- 667 I. (10s.)—J. PEARMAN, Penny Long Lane, Derby.
 664 II. (7s. 6d.)—G. W. KIRBY, 17 Priory Road, Knowle, Bristol.
 662 III. (5s.)—R. BROWN & SON, Flora Apiary, Somersham, Hants.
 668 R. N. & H. C.—W. TUCKER, Jump, High Bickington, Umberleigh, Devon.

Class 550.—*Exhibits of not less than 3 lb. of Beeswax, the Produce of the Exhibitor's Apiary.* [6 entries.]

- 673 I. (10s.)—J. PEARMAN, Penny Long Lane, Derby.
 669 II. (7s. 6d.)—J. BERRY, The Apiary, Llanrwst.
 670 III. (5s.)—T. A. DENNISON, The Laurels, Stockton, Rugby.
 672 R. N. & H. C.—G. W. KIRBY, 17 Priory Road, Knowle, Bristol.

Class 551.—*Honey Vinegar.* [3 entries.]

- 677 I. (7s. 6d.)—G. W. KIRBY, 17 Priory Road, Knowle, Bristol.
 675 II. (5s.)—R. BROWN & SON, Flora Apiary, Somersham, Hants.
 676 Certificate of Merit.—MRS. W. HERROD, Old Bedford Road, Luton.

Class 552.—*Mead.* [6 entries.]

- 680 I. (7s. 6d.)—MRS. W. HERROD, Old Bedford Road, Luton.
 681 II. (5s.)—A. McCULLAGH, Webberton, Dunchideock, Exeter.
 678 Certificate of Merit.—G. H. BARNES, 1 Shepherd's Lane, Dartford.

Class 553.—*Exhibits of a practical or interesting nature connected with Bee-culture, not mentioned in the foregoing Classes.* [No entry.]

Class 554.—*Exhibit of a scientific nature, not mentioned in the foregoing Classes, to which no prize has been awarded at a Show of the R.A.S.E.*
 [2 entries.]

- 684 I. (10s.)—J. S. BALDREY, Clacketgate, Lincoln.
 685 II. Certificate of Merit.—G. STEVENTON, Shaftesbury Lodge, Bisleigh, Surrey.

BUTTER-MAKING COMPETITIONS.

Tuesday, July 1st. [36 entries.]

- 23 I. (£5.)—MISS ELsie ADDIS, Chilston, Madley, Hereford.
 18 II. (£3.)—MISS GEORGINA J. SLATTER, Frampton Farm, Alderton, Tewkesbury.
 24 III. (£2.)—MISS L. O. P. GORDON-ALLEN, Belmont, Crickley Hill, Gloucester.
 31 IV. (£1.)—MISS ROSE HULL, Croome Farm, Severn Stoke, Worcs.
 19 V. (10s.)—MISS JANE WILLIAMS, Hendre Farm, Pontypridd
 26 Certificate of Merit.—MISS GLADYS M. MARFELL, Great House, Llangevieu, U.K.

Wednesday, July 2nd. [36 entries.]

- 39 I. (£5.)—MISS L. M. BOMFORD, Stoulton Farm, Worcester.
 58 II. (£3.)—MISS MARTHA BEATRICE DAVIES, Cefn Carnau Farm, Cierphilly.
 68 III. (£2.)—MISS MARY F. READ, Church Farm, Cam, Dursley.
 44 IV. (£1.)—MISS JESSIE FLETCHER, Haydon Grange, Compton Martin, Bristol.
 65 V. (10s.)—MISS RUBY HARDING, The Farm, Whitminster, Stonehouse.
 50 Certificate of Merit.—MISS EMILY PARRY, Mitchell, Ledbury.

Thursday, July 3rd. [35 entries.]

- 93 I. (£5.)—MISS CLARA SPENCER, Ty Gwyn, Llandale, Kilgeddin, Abergavenny.
 103 II. (£3.)—MISS E. M. MORTIMER, The Gables, Box, Minchinhampton, Stroud.
 73 III. (£2.)—A. J. MILDON, Higher Mead Down, Rackenford, Devon
 77 IV. (£1.)—MISS DOLLY SMITH, Trehermes Farm, Pedmore, Stourbridge
 81 V. (10s.)—MISS ALICE SPENCER, Ty Gwyn, Llandale, Kilgeddin, Abergavenny.
 99 E. N. & H. C.—MISS EMILY G. PROUT, Standish Court, Stonehouse.

Open Champion Class.—Saturday, July 5th. [52 entries.]

- 130 I. (£10, & Champion.)—MISS JENNIE L. PRICHARD, Village Farm, Upton Warren, Bromsgrove.
 130 E. N. & H. C.—MISS CISSIE PANTALL, Keep Hill, Bromyard.

Special Prizes given by the Devon County Agricultural Education Committee for candidates resident in Devonshire who obtain the highest number of marks in the competitions.

- 73 (£4.)—A. J. MILDON, Higher Mead Down, Rackenford.
 42 (£3.)—MISS L. PAGE, Whitley Barton, St. Giles, Torrington.
 10 (£2.)—MRS C. A. SIMMONS, Heathfield, Olyst St. Mary, Exeter

Special Prizes given by the Gloucestershire Agricultural Sub-Committee for candidates resident in Gloucestershire who obtain the highest number of marks in the competitions.

- 103 (£4.)—MISS E. M. MORTIMER, The Gables, Box, Minchinhampton.
 68 (£3.)—MISS MARY F. READ, Church Farm, Cam, Dursley.
 18 (£2.)—MISS GEORGINA J. SLATTER, Frampton Farm, Alderton, Tewkesbury.
 65 (£1.)—MISS RUBY HARDING, The Farm, Whitminster, Stonehouse.

Special Prizes given by the Monmouthshire County Agricultural Education Committee for candidates resident in Monmouthshire who obtain the highest number of marks in the competitions.

- 93 (£4.)—MISS CLARA SPENCER } Ty Gwyn, Llandale, Kilgeddin, Abergavenny.
 81 (£3.)—MISS ALICE SPENCER }
 26 (£2.)—MISS GLADYS M. MARFELL, Great House, Llangevieu, U.K.
 58 (£1.)—MISS ANNIE MORGAN, The Meads, Trelleck Grange, Chepstow.

Special Prizes given by the Somerset County Agricultural Instruction Committee for candidates resident in Somersetshire who obtain the highest number of marks in the competitions.

- 44 (£4.)—MISS JESSIE FLETCHER, Haydon Grange, Compton Martin, Bristol.
 17 (£3.)—MISS EDITH FORD, Cross Tree Farm, Walton-in-Gordano, Clevedon.
 97 (£2.)—MRS. IDA WINTER, Rookery Farm, Norton Malward, Pensford, Bristol.
 14 (£1.)—MISS KITTY RAWLINGS, Claydon Farm, Newton St. Loe, Bristol.

Special Prizes given by the Worcestershire Agricultural Education Committee for candidates resident in Worcestershire who obtain the highest number of marks in the competitions.

- 39 (£4.)—MISS L. N. BOMFORD, Stoulton Farm, Worcester.
 77 (£3.)—MISS DOLLY SMITH, Trehermes Farm, Pedmore, Stourbridge.
 81 (£2.)—MISS ROSE HULL, Croome Farm, Severn Stoke.
 70 (£1.)—MISS MARY NIXON, Sermons Farm, Wadborough, Worcester

HORSE-SHOELING COMPETITIONS.

Class 1.—*Hunters*. [40 competitors.]

- 21 I. (£5, & G. M.¹)—HERBERT MORGAN, A.F.O.L., R.S.S., Cwmpwr, Llanarthney, Carmarthenshire.
 24 II. (£3 10s., & S. M.²)—E. G. NORTON, A.F.O.L., R.S.S., 2 Finchley Avenue, Finch Road, Handsworth, Staffs.
 12 III. (£2 10s., & S. M.²)—THOMAS GEORGE FELTHAM, A.F.O.L., R.S.S., 3 St Ann Street, Salisbury.
 31 IV. (£2.)—FREDERICK WILLIAM SHEPPARD, R.S.S., The Forge, Upham, Southampton.
 3 V. (£1 10s., & B. M.³)—SAMUEL CHAPMAN, R.S.S., Sturwick, Wellingborough.
 18 VI. (£1.)—HARRY JONES, R.S.S., The Hendre Forge, Monmouth.
 9 R. N. & H. C.—CHARLES S. DOUBLE, A.F.O.L., R.S.S., Holmleigh, Spencers Wood, Reading.

Class 2.—*Roadsters*. [56 competitors.]

- 65 I. (£5, & G. M.¹)—HARRY JONES, R.S.S., The Hendre Forge, Monmouth.
 94 II. (£3 10s., & S. M.²)—F. R. WHITEHORN, R.S.S., Central Shoeing Forge, Ebbw Vale.
 71 III. (£2 10s., & B. M.³)—WILLIAM MORGAN, Cwmpwr, Llanarthney, Carmarthen.
 42 IV. (£2.)—EDWIN BROMFIELD, R.S.S., Shoeing Forge, Circus Mews, Bath.
 55 V. (£1 10s.)—A. E. FELTHAM, R.S.S., Odstock, Salisbury.
 48 VI. (£1.)—ELI DEAVILLE, R.S.S., Hambury, Burton-on-Trent.
 93 R. N. & H. C.—ERNEST J. WHITEHORN, A.F.O.L., R.S.S., Globe Shoeing Forge, Tredegar, Mon.

Class 3.—*Cart Horses*. [49 competitors.]

- 103 I. (£5, & G. M.¹)—CHARLES S. DOUBLE, A.F.O.L., R.S.S., Holmleigh, Spencers Wood, Reading.
 99 II. (£3 10s., & S. M.²)—DAVID DAVIES, R.S.S., Duffryn Street, Mountain Ash.
 121 III. (£2 10s., & B. M.³)—HARRY JONES, R.S.S., The Hendre Forge, Monmouth.
 145 IV. (£2.)—GWILYM WILKINS, R.S.S., Danygraig, Talog, Carmarthen.
 101 V. (£1 10s.)—ELI DEAVILLE, R.S.S., Hambury, Burton-on-Trent.
 131 VI. (£1.)—E. G. NORTON, A.F.O.L., R.S.S., 2 Finchley Avenue, Finch Road, Handsworth, Staffs.
 120 R. N. & H. C.—EVAN JONES, 281 Park Road, Cwmpwr, Treorchy, Glam.

Special Prizes given by the Gloucestershire Agricultural Sub-Committee in each Class to Students who have attended Classes in Farriery conducted by their Instructor in the County.

Class 1.

- 17 (£2.)—OLIVER HIGGINS, R.S.S., St. John Street, Thornbury.
 33 (£1.)—TOM ROBINSON STEVENS, R.S.S., The Bridge, Fairford.
 18 (10s.)—JOSEPH HEMMINGS, R.S.S., Three Horse Shoes, Lechlade.
 1 R. N. & H. C.—SAMUEL BAYLISS, R.S.S., North Street, Winchcombe.

Class II.

- 74 (£2.)—GEORGE OAKLEY, R.S.S., 9 Park Street, Fairford.
 61 (£1.)—JOSEPH HEMMINGS, R.S.S., Three Horse Shoes, Lechlade.
 85 (10s.)—TOM ROBINSON STEVENS, R.S.S., The Bridge, Fairford.
 62 R. N. & H. C.—OLIVER HIGGINS, R.S.S., St. John Street, Thornbury.

Class III.

- 116 (£2.)—OLIVER HIGGINS, R.S.S., St. John Street, Thornbury.
 115 (£1.)—JOSEPH HEMMINGS, R.S.S., Three Horse Shoes, Lechlade.
 112 (10s.)—JOHN JAMES HALL, R.S.S., 51 Lewis Lane, Cirencester.
 136 R. N. & H. C.—THOMAS ROBINSON, R.S.S., Buscot, Lechlade.

FARM PRIZE COMPETITIONS.³

(Open to *bonâ fide* Tenant Farmers.)

Classes 1 and 2.—For the best managed Farms in Gloucestershire.

Class 1.—*Farms of 250 acres or over, exclusive of Down*. [5 entries.]

- 3 I. (£80.)—GEORGE H. JONES, Badminton, S.O.
 2 II. (£40.)—HENRY BRIDGMAN, Clove Hill Farm, Downend, Bristol.
 4 R. N.—THOMAS RICH, Aldsworth, Northleach.

¹ Gold Medal given by the Worshipful Company of Farriers to the First Prize Winner in each Class.

² Silver and Bronze Medals given by the National Master Farriers' Association, in each Class, for Members of that Association only.

³ Prizes given by the Bristol Local Committee.

Class 2.—*Farms of not less than 50 and under 250 acres, exclusive of Down.*
[3 entries.]

- 7 I. (£50.)—HENRY MATTHEWS, Down Farm, Winterbourne, Bristol.
6 II. (£30.)—WILLIAM McEWEN SMITH, Westmoreland Farm, Henbury, Bristol.
Classes 3, 4, and 5—For the best managed Farms in Somersetshire and Dorsetshire.

Class 3.—*Farms of 300 acres or over, exclusive of Down.* [7 entries.]

- 14 I. (£80.)—PERCY C TORY, Shapwick, Blandford.
15 II. (£40.)—WILLIAM R. WITHERS, Lower Court Farm, Long Ashton, Bristol.
11 R. N. & H. C.—FRANK J. MERSON & SON, Farrington, North Petherton, Bridgwater.

Class 4.—*Farms of not less than 150 and under 300 acres, exclusive of Down.*
[11 entries.]

- 16 I. (£80.)—J. KING BRAIN, Little Weston Farm, Sparkford, Somerset.
28 II. (£40.)—WALTER GEORGE WILLIAMS, Elm Tree Farm, Portbury, Bristol.
33 R. N. & H. C.—ALBERT J. ROWLES, Houndstone Farm, Yeovil.

Class 5.—*Farms of not less than 50 and under 150 acres, exclusive of Down.*
[6 entries.]

- 27 I. (£40.)—BENJAMIN ROBERT BROUGHTON, Telling's Farm, Crewkerne.
30 II. (£20.)—JOHN MARSHALL, Ham Farm, Wraxall, Bristol.
32 R. N. & H. C.—SAMUEL A. ROSSITER, Lymburgh's Farm, Marnhull, Blandford.

FORESTRY SECTION.

Class 1.—*Specimens of Oak, Elm, Ash, and Beech Timber.* [4 entries.]

- 1 I. (Silver Medal.)—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.
3 II. (Bronze Medal.)—DAME EMILY FRANCES SMYTH, Ashton Court, Bristol.
2 R. N. & H. C.—THE EARL OF MORLEY, Whiteway House, Chudleigh, Devon.

Class 2.—*Specimens of Larch, Spruce, and Scotch Pine Timber.* [7 entries.]

- 7 I. (Silver Medal.)—THE EARL OF MORLEY, Whiteway House, Chudleigh, Devon.
5 II. (Bronze Medal.)—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.
9 R. N. & H. C.—LADY WANTAGE, Lockinge Park, Wantage.

Class 3.—*Specimens of any other sort of Hard Wood or Broad-leaved Timber.*
[1 entry.]

- 12 I. (Silver Medal.)—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.

Class 4.—*Specimens of any other sort of Coniferous Timber.* [3 entries.]

- 13 I. (Silver Medal.)—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.
14 (Bronze Medal.)—THE EARL OF CARNARVON, Highclere Castle, Newbury.
15 (Bronze Medal.)—LADY WANTAGE, Lockinge Park, Wantage.

Class 5.—*Oak Field Gates for Farm use.* [4 entries.]

- 19 I. (Silver Medal.)—R. J. RAYNTON HIPPISELEY, Ston Easton Park, Bath.
16 II. (Bronze Medal.)—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.
18 R. N. & H. C.—SIR GEORGE A. COOPER, BT., Hursley Park, Winchester.

Class 6.—*Field Gates for Farm use, of any other Home-grown Wood.* [7 entries.]

- 20 I. (Silver Medal.)—R. J. RAYNTON HIPPISELEY, Ston Easton Park, Bath.
22 II. (Bronze Medal.)—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.
25 R. N. & H. C.—SIR GEORGE A. COOPER, BT., Hursley Park, Winchester.

Class 7.—*Wicket or Hunting Gates.* [6 entries.]

- 29 I. (Silver Medal.)—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.
31 II. (Bronze Medal.)—SIR GEORGE A. COOPER, BT., Hursley Park, Winchester.
34 R. N. & H. C.—COLONEL MARLING, V.O., C.B., Sedbury Park, Chepstow.

Class 8.—*Tree Guards.* [3 entries.]

- 35 I. (Silver Medal.)—EARL BEAUCHAMP, K.O.M.G., Madresfield Court, Malvern.

Class 9.—*Fencing, of home-grown wood, and made in Great Britain.*
[1 entry.]

- 38 I. (Silver Medal.)—SIR GEORGE A. COOPER, BT., Hursley Park, Winchester.

Class 10.—*Fencing, of Foreign Timber.* [2 entries.]

- 39-47 I. (Silver Medal.)—ARMSTRONG, ADDISON & Co., Sunderland.
48-56 II. (Bronze Medal.)—ENGLISH BROTHERS, LTD., Wisbech.

Class 11.—*Specimens showing comparative quality of any Timber grown on different soils and situations, and the respective ages at which it reaches marketable size and maturity.*

[2 entries]

57 (Silver Medal).—EARL BEAUCHAMP, K C M G, Madresfield Court, Malvern

51 R. N. & H. C.—M P PRIOR, Tibberton Court, Gloucester

Class 12—*Specimens of Stems, and Boards cut from them, illustrating the effects of dense and thin crops in branch suppression and quality of timber.*

[1 entry]

59 (Silver Medal).—EARL BEAUCHAMP, K C M G, Madresfield Court, Malvern

Class 13.—*Nurserymen's Competition for the best exhibit of Specimen and Ornamental Trees* [1 entry]

60 (Silver Medal).—DICKSONS, LTD, Chester

Classes 14 to 22.—*Articles not for competition.*

Silver Medal.—ROYAL AGRICULTURAL COLLEGE, Cirencester.

Silver Medal.—THE DUKE OF WELLINGTON, K G, Strathfield-aye, Mortimer, Berks

Silver Medal.—DICKSONS, LTD, Chester

Silver Medal.—FISHER SON & SIBBAY, LTD, Royal Nurseries, Handsworth, Sheffield.

Bronze Medal.—EARL STANHOPE Chevening, Sevenoaks

Gold Medal for the best general collection of exhibits in Classes 1-22 to EARL BEAUCHAMP, K C M G, Madresfield Court, Malvern

Home Grown Tobacco.

I (Silver Medal).—MAJOR G F WHITMORE, Methwold, Norfolk.

II. (Bronze Medal).—COL SIR NUGENT T. EVERARD, BT, Randlestown, Navan, Co. Meath.

R. N. & H C.—MAJOR G F WHITMORE, Methwold, Norfolk

PLANTATIONS COMPETITION.

Restricted to Somerset, Devon, Cornwall, and Monmouthshire.

Plantations must not be of less than five years' growth

STAGE A.—Plantations which have been weeded or lightly thinned, including the removal of dead or dying trees

STAGE B.—From the end of STAGE A up to the completion of the second thinnings

SECTION I.

HARDWOODS as final crop To be not less than 4 acres in extent Restricted to estates of which more than 300 acres are woodlands.

Class 1, Stage A.

I. (Silver Medal).—DAME EMILY FRANCIS SMYTH, Ashton Court, Bristol

Class 2, Stage B.

No Entry

CONIFERS. To be not less than 1 acres in extent Restricted to estates of which more than 300 acres are woodlands.

Class 3, Stage A.

I. (Silver Medal).—O M. CROMPTON ROBERTS Drybridge, Monmouth

II. (Bronze Medal).—EARL POULETT, Hinton House, Hinton St. George, Somerset.

Class 4, Stage B.

I. (Silver Medal).—A. F. LUTTRELL, Dunster Castle, Dunster, Somerset.

SECTION II.

HARDWOODS as final crop To be not less than 2 acres in extent Restricted to estates of which less than 300 acres are woodlands

Class 5, Stage A.

II. (Bronze Medal).—THE DUKE OF DEVONSHIRE, G.C.V.O., Devonshire House, Piccadilly, London, W.

Class 6, Stage B.

[No entry.]

CONIFERS. To be not less than 2 acres in extent. Restricted to estates of which less than 300 acres are woodlands.

Class 7, Stage A., and Class 8, Stage B.

[No entries.]

Class 9.—*Best examples showing systematic management of existing woodland area, including the renovation and conversion of an unprofitable wood into a profitable condition.*

I. (Silver Medal).—A. F. LUTTRELL, Dunster Castle, Dunster, Somerset.

II. (Bronze Medal).—MAJOR-GENERAL SIR IVOR J. C. HERBERT, Bt., C.B., C.M.G., M.P., Llanarth Court, Raglan, Mon.

Class 10.—*Plantations of not less than 2 acres, consisting of Douglas Fir, Sitka Spruce, Japanese Larch, Corsican Pine, or any other rarer Conifer, pure or mixed, of not less than five or more than thirty years' growth.*

I. (Silver Medal).—A. F. LUTTRELL, Dunster Castle, Dunster, Somerset.

II. (Bronze Medal).—EARL FORTESQUE, Castle Hill, South Molton.

Class 11.—*Best managed woodland estates, not less than 1,000 acres in area.*

I. (Gold Medal).—DAME EMILY FRANCES SMYTH, Ashton Court, Bristol.

Gold Medal given by the Royal English Arboricultural Society for the best Plantation to C. M. CROMPTON ROBERTS, Drybridge, Monmouth.

HOME NURSERIES COMPETITION.

Restricted to Somerset, Devon, Cornwall, and Monmouthshire.

Class 1.—*Best Managed General Home Nurseries, not less than 1 acre in extent.*

I. (Silver Medal).—DAME EMILY FRANCES SMYTH, Ashton Court, Bristol.

II. (Bronze Medal).—EARL FORTESQUE, Castle Hill, South Molton.

Class 2.—*Best Managed General Home Nurseries, less than 1 acre in extent.*

[No entry.]

Class 3.—*Best Managed Temporary Forest Nurseries.*

[No entry.]

HORTICULTURAL EXHIBITION.

Class 1.—*Groups of Miscellaneous Plants, in and out of bloom.* [3 entries.]

1 I. (£30).—JAMES CYPHER & SONS, Queen's Road Nurseries, Cheltenham.

2 II. (£25).—W. A. HOLMES, West End Nurseries, Chesterfield.

3 III. (£20).—C. J. ELLIS, Weston Nursery, Knightstone Road, Weston-super-Mare.

Class 2.—*Collections of Orchids.* [2 entries.]

5 I. (Gold Medal & £10).—ARMSTRONG & BROWN, Tunbridge Wells.

4 II. (£5).—JAMES CYPHER, Exotic Nurseries, Cheltenham.

Class 3.—*Groups of Carnations, Flowers, and Plants combined.* [1 entry.]

6 I. (Gold Medal & £5).—CHARLES WALL, Melrose Nursery, South Down, Bath.

Class 4.—*Groups of Tuberous Begonias in pots.* [1 entry.]

7 I. (Gold Medal & £10).—BLACKMORE & LANGDON, Twerton Hill Nursery, Bath.

Class 5.—*Groups of Hardy Plants, Bamboos, Water Lilies, and Aquatic &c.* [1 entry.]

7A I. (£20).—WM. ARTINGDALE & SON, Nether Green Nurseries, Sheffield.

Class 6.—*Groups of Hardy Herbaceous Plants and Cut Flowers.* [3 entries.]

8 I. (£15).—HARKNESS & SONS, Bedale, Yorks.

9 II. (£10).—GIBSON & CO., Leeming Bar, Bedale.

9A III. (£8).—WM. ARTINGDALE & SON, Nether Green Nurseries, Sheffield.

Class 7.—*Collections of Cut Sprays of Carnations.* [1 entries.]

- 11 I. (£5. & Gold Medal.)—CHARLES WAIL, Melrose Nursery, South Down, Bath.
 10 II. (£3.)—THE DUCHESS OF SOMERSET, Maiden Bradley, Bath.
 13 III. (£2.)—O. ENGELMANN, Saffron Walden.

Class 8.—*Collections of 12 Shrub Roses.* [5 entries.]

- 17 I. (£3.)—ALEX. DICKSON & SONS, LTD., Hawlmark, Newtownards, co. Down.
 20 II. (£2.)—KING'S ACRE NURSERIES, LTD., Hereford.
 18 III. (£1.)—ENGLISH LTD., Gloucester.

Class 9.—*Collections of Cut Roses.* [1 entries.]

- 22 I. (£5. & Gold Medal.)—ROLAND ADAMS, White Walls Nurseries, Larkhall, Bath.
 23 II. (£3.)—GEORGE COOLING & SONS, The Nurseries, Bath.

Class 10.—*Collections of Sweet Peas.* [1 entries.]

- 29 I. (£5.)—E. W. KING & CO., Coggeshall, Essex.
 27 II. (£3.)—MISS HEMUS, Holdfast, Upton-on-Severn
 26A III. (£2.)—G. STEPHENSON, Wimborne.
 26 IV. (£1.)—S. BIDE & SONS, Farnham, Surrey.

Class 11.—*Collections of Eight Kinds of Vegetables.* [No entry.]Class 12.—*Decorative Displays of Ripe Fruit.* [1 entry.]

- 31 I. (£15.)—THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Worksop.

Class 13.—*Four bunches of Grapes, of distinct varieties.* [1 entry.]

- 32 I. (£3.)—THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Worksop.

Class 14.—*Two bunches of Muscat Grapes.* [1 entry.]

[No Award]

Class 15.—*Two bunches of Black Hambro Grapes.* [1 entry.]

- 34 I. (30s.)—THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Worksop.

Class 16.—*Two bunches of Madresfield Court Grapes.* [1 entry.]

- 35 I. (30s.)—THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Worksop.

Class 17.—*Two dishes of Peaches, of distinct varieties.* [1 entry.]

- 36 I. (30s.)—THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Worksop.

Class 18.—*Two dishes of Nectarines, of distinct varieties.* [1 entry.]

- 37 I. (30s.)—THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Worksop.

Class 19.—*Four dishes of Strawberries, of distinct varieties.* [3 entries.]

- 39 I. (30s.)—JOHN RICKETTS, Bathaston, Bath.
 38 II. (20s.)—EDWARD FISHER, Bathaston, Bath.

Horticultural Exhibits not for Competition.

Large Gold Medals to :—

- LT.-COL. SIR GEO. HOLFORD, K.C.V.O., Westonbirt, Tetbury, Glouc., for Orchids.
 LT.-COL. SIR GEO. HOLFORD, K.C.V.O., for Hippenstrums.
 GEO. MALET & CO., Cheddar, Som., for Rock and Border Plants and Flowering Shrubs.
 SUTTON & SONS, Reading, for Vegetables, Fruit, and Flowers.

Gold Medals to :

- VERNON HILL, Mendip Nurseries, Langford, Bristol, for Herbaceous and Alpine Plants, and Sweet Peas.
 JAMES CARTER & CO., Raynes Park, London, S.W., for Vegetables.
 DOBBIE & CO., Edinburgh, for Fancies and Violets.
 ALEX. DICKSON & SONS, LTD., Hawlmark, Newtownards, Ireland, for New and Hybrid Tea Roses.
 ISAAC HOUSE & SON, Westbury-on-Trym, Bristol, for Sweet Peas, Herbaceous and Alpine Plants.
 JARMAN & CO., Chard, Somerset, for Sweet Peas, Centaureas, and Roses.
 JOHN JEFFERIES & SON, LTD., Cirencester, for Conifers, &c.
 KING'S ACRE NURSERIES, LTD., Hereford, for Fruit Trees bearing fruit and Herbaceous Flower.
 H. B. MAY & SONS, LTD., Fern Nurseries, Upper Edmonton, London N., for New and Rare Choice Ferns.
 STUART LOW & CO., Bush Hill Park, Enfield, Middlesex, for Roses, Carnations, and Orchids.
 YOUNG & CO., Nurserymen, Hatherley, Cheltenham, for Carnations.
 E. W. KING & CO., Coggeshall, Essex, for Sweet Peas.
 W. J. UNWIN, Histon, Cambridgehire, for Sweet Peas.

Silver Gilt Medals to:—

GEO. COOLING & SONS, The Vineries, Bath, for Roses, Clematis, Hardy Trees, &c.
H. N. ELLISON, 57 Bull Street, West Bromwich, for Palms and Ferns
JAMES GARAWAY & CO., Clifton, Bristol, for Schizanthus and Pelumnas
GODFREY & SON, Nurseries, Exmouth, Devon, for Pelargonium and Solanums.
A. J. KRELLING & SONS, Westgate Hill Bradford, for Cut Roses.
KELWAY & SON, Lingport, Som., for Delphiniums and Out Flowers.
PARKER & SONS (BRISTOL), LTD., 40 Queen's Road, Bristol, for Cut Roses.
A. WALTERS & SON Kensington Nurseries, Bath, for Roses and Herbaceous Flowers
ROBERT VEITCH & SONS, New North Road, Exeter, for Miscellaneous Plants.
A. F. DUTTON, The Nurseries, Iwer, Bucks., for Carnations.
JAS. MACDONALD, Harpenden, Herts., for Grass Seeds
JOHN WATERER & SONS, American Nurseries, Bagshot, Surrey, for Flowering Shrubs and Rhododendrons.
WM. ARTINGDALE & SON, Nether Green Nurseries, Sheffield, for Violas, Sweet Peas, and Roses
BLACKMORE & LANGDON, Twerton Hill Nursery, Bath, for Begonias and Delphiniums.
JAMES OYPHER, Exotic Nurseries, Cheltenham, for Group of Plants

Silver Medals to:—

E. C. BOWETT, Alpines Garden, Cemetery Road, Cheltenham, for Choice Alpines.
WM. OUTBUSH & SON, Highgate Nurseries, London, N., for Carnations, Roses, and Hydrangeas.
O. J. ELLIS, Weston Nursery, Knightstone Road, Weston-super-Mare, for Collection of Alpine and Stove and Greenhouse Plants.
MISS HEMMIS, Holdfast, Upton-on-Severn, for Sweet Peas.
JOHN MILBURN, Victoria Nurseries, Weston Road, Bath, for Alpine and Hardy Plants.
RICH & CO., 2 Walcot Street, Bath, for Hardy Out Flowers.
W. TRESDER, LTD., The Nurseries, Cardiff, for Roses and Pelargoniums.
GEORGE MASSEY & SONS, Spalding, for Hardy Out Flowers.
COL. CARY BRYEN, Abbot's Leigh, Bristol, for Collection of Orchids.
TOOGOOD & SONS, Southampton, for Vegetables.

Award of Merit to:—

A. DICKSON & SONS, LTD., Hawtmark, Newtownards, co. Down, for Rose, Mrs. A. Glyn Kidson, H.T. (new); Rose, Denis, H.T. (new).
YOUNG & CO., Cheltenham, for Carnations (Perpetuals) Hon. John Boscawen and Lady Nunburnholme.

Royal Horticultural Society Deputation Awards.

Gold Medal to:—

SIR GEO. HOLFORD, Westonbirt, Tetbury, Glos., for Collection of Orchids.

Silver Gilt Cups to:—

SIR GEO. HOLFORD, Westonbirt, Tetbury, Glos., for Hippeastrums.
BLACKMORE & LANGDON, Twerton Hill Nursery, Bath, for Begonias.
THE DUKE OF PORTLAND K.G., Welbeck Abbey, Worksop, for Fruits.
H. B. MAY & SONS, LTD., Fern Nurseries, Upper Edmonton, London, N., for Collection of Rare and Choice Ferns.

Large Silver Cups to:—

JAS. OYPHER & SONS, Queen's Road Nurseries, Cheltenham, for Group of Miscellaneous Plants.
KING'S ACRES NURSERIES, LTD., Hereford, for Fruit Trees in Pots.
ISAAC HOUSE & SON, Westbury-on-Trym, for Alpines in Pots.
SUTTON & SONS, Reading, for Vegetables, Fruit, and Flowers.

Silver Cups to:—

WILLIAM A. HOLMES, West End Nurseries, Chesterfield, for Group of Miscellaneous Plants.
HARKNESS & SONS, Grange Nurseries, Bedale, Yorks., for Group of Herbaceous Plants.
STUART LOW & CO., Bush Hill Park, Enfield, Middlesex, for Mixed Group (Roses, Carnations, and Orchids).

Standard Cups to:—

GEO. MALLITT & CO., Cheddar, for Rock Plants.
JAMES CARTER & CO., Raynes Park, London, S.W., for Vegetables.
G. GIBSON & CO., Leeming Bar, Bedale, Yorks., for Hardy Herbaceous Plants
JOHN JEFFERIES & SON, LTD., Cirencester, for Conifers.
ALEX. DICKSON & SONS, LTD., Hawtmark, Newtownards, Ireland, for Roses.
GODFREY & SONS, Nurseries, Exmouth, for Pelargoniums, &c.
CHARLES WALL, Melrose Nursery, South Down, Bath, for Carnations.
ARMSTRONG & BROWN, Tunbridge Wells, Kent, for Orchids.
VERNON HILL, Mendip Nurseries, Langford, Bristol, for Sweet Peas.

Silver Gilt Flora to :—

DOBBIE & CO., Edinburgh, for Sweet Peas.
ROLAND ADAMS, White Wells Nurseries, Larkhall, Bath, for Roses.
YOUNG & CO., Hatherley, Cheltenham, for Carnations.

Silver Gilt Banksains to :—

E. W. KING & CO., Coggeshall, for Sweet Peas.
JARMAN & CO., Chard, Somerset, for Roses and Sweet Peas.
W. J. UNWIN, Histon, Cambridgeshire, for Sweet Peas.
GEO. COOLING & SONS, The Vineries, Bath, for Roses.

Silver Knightian Medal to :—

TOOGOOD & SONS, Southampton, for Vegetables.

Silver Flora Medals to :—

WM. ARTINGDALE & SON, Nether Green Nurseries, Sheffield, for Water Garden.
A. WALTERS & SON, Kensington Nurseries, Bath, for Roses.
KELWAY & SON, Langport, Somerset, for Delphiniums.
ROBERT VEITCH & SONS, New North Road, Exeter, for Miscellaneous Plants.
H. N. ELLISON, 5/7 Ball Street, West Bromwich, for Palms and Ferns.
A. F. DUTTON, The Nurseries, Iver, Bucks, for Carnations.
JAMES GARAWAY & CO., Clifton, Bristol, for Eucharis, &c.

Silver Banksain Medals to :—

COL. CARY BATTEN, Abbots Leigh, Bristol, for Orchids.
A. J. KEELING & SONS, Westgate Hill, Bradford, for Orchids.
VINCENT SLADE, Staplegrave Nurseries, Taunton, for Pelargoniums.
PARKER & SONS, LTD., 40 Queen's Road, Bristol, for Roses.
MISS HEMUS, Holdfast, Upton-on-Severn, for Sweet Peas.

IMPLEMENTS.

Trials of Milking Machines. [13 entries.]

5429 I. (£25, & Gold Medal).—MJOLEKNINGSMASKIN OMEGA, Flen, Sweden.
1449 II. (£10, & Silver Medal).—VACCAR, LTD., 7 Denman Street, London, S.E.

Trials of Hand-power Machines for applying dry insecticides or fungicides in powder form to bushes or trees. [8 entries.]

891 I. (£10).—F. W. MOELLENKAMP & CO., 85 Farringdon Street, London, E.C.
8820 II. (£5).—FILTET & CO., 23 Bush Lane, London, E.C.

Miscellaneous Implements.

Silver Medal for articles entered as "New Implements for Agricultural or Estate Purposes."

1862 PERFECT DAIRY MACHINES, LTD., 105 Middle Abbey Street, Dublin, for Cream Separator.

PRIZE LIST

For SHREWSBURY SHOW, JUNE 30 to JULY 4, 1914.

Total value of Prizes offered (inclusive of Champion Prizes, Special Prizes, Cups, Medals, and Class Prizes), 11,700*l.*, of which amount 2,188*l.* are contributions from the Shrewsbury Local Committee, 2,606*l.* 12*s.* 6*d.* from various Breed Societies, and 793*l.* 10*s.* from other sources.

CHAMPION PRIZES.

The following Champion Prizes are offered by Breed Societies and others :—

HORSES.

SHIRE HORSE SOCIETY :—Two Gold Medals, value 10*l.* each (or 10*l.* in money), for the best Shire Stallion, and for the best Mare or Filly, and 5*l.* each to the Breeders of the Champion Shire Stallion, and Mare or Filly.

CLYDESDALE HORSE SOCIETY :—Two Prizes of 10*l.* each for the best Clydesdale Stallion, and for the best Mare or Filly.

SUFFOLK HORSE SOCIETY :—Challenge Cup, value 50*l.*, for the best Suffolk Stallion.

HUNTERS' IMPROVEMENT AND NATIONAL LIGHT HORSE BREEDING SOCIETY :—Two Gold Medals for the best Hunter Mare 4 years and upwards, and for the best Filly not exceeding 3 years old.

NATIONAL PONY SOCIETY :—Two Gold Medals for the best Polo and Riding Pony Stallion or Colt, and for the best Mare or Filly ; also a Bronze Medal for the best Foal.

HACKNEY HORSE SOCIETY :—Two Gold Medals, value 10*l.* each (or 10*l.* in money), for the best Hackney Stallion, and for the best Mare or Filly.

SHETLAND PONY STUD BOOK SOCIETY :—Silver Medal for the best Shetland Pony.

WELSH PONY AND COB SOCIETY :—Four Silver Medals and Certificates for the best Welsh Pony Stallion, and for the best Mare or Filly.

HUNTER RIDING CLASSES :—A Gold Challenge Cup, value 52*l.* 10*s.*, for the best Hunter Mare or Gelding in the Riding Classes.

HACK AND RIDING PONIES :—A Gold Challenge Cup, value 52*l.* 10*s.*, for the best Hack or Riding Pony.

HARNESS CLASSES :—A Gold Challenge Cup, value 52*l.* 10*s.*, for the best Single Harness Mare or Gelding in novice classes.

A Gold Challenge Cup, value 52*l.* 10*s.*, for the best Single Harness Mare or Gelding.

Two Gold Challenge Cups, value 52*l.* 10*s.* each, (i.) for the best Pair, (ii.) for the best Tandem.

FOUR-IN-HANDS :—A Gold Challenge Cup, value 52*l.* 10*s.*, for the best Team.

CATTLE.

SHORTHORN SOCIETY :—Two Prizes of 20*l.* each for the best Shorthorn Bull, and for the best Cow or Heifer, and a Silver Medal to the breeders of the Champion Shorthorn Bull and Cow or Heifer.

DAIRY SHORTHORN (COATES'S HERD BOOK) ASSOCIATION :—Prize of 10*l.* for the best Pedigree Shorthorn Dairy Cow or Heifer ; and a Challenge Cup, value 52*l.* 10*s.*, for the best Pedigree Dairy Shorthorn Group of one Bull and two Cows or Heifers.

LINCOLNSHIRE RED SHORTHORN ASSOCIATION :—Two Prizes of 10*l.* each for the best Shorthorn Bull, and for the best Cow or Heifer.

HEREFORD HERD BOOK SOCIETY:—Two Prizes of 10*l* 10*s* each for the best Hereford Bull, and for the best Cow or Heifer.

DEVON CATTLE BREEDERS' SOCIETY:—Two Prizes of 10*l* 10*s* each for the best Devon Bull, and for the best Cow or Heifer.

SOUTH DEVONS —A Challenge Cup, value 20*l*, for the best South Devon animal.

LONGHORN CATTLE SOCIETY:—Two Challenge Cups value 15*l* each, for the best Longhorn animals.

SUSSEX HERD BOOK SOCIETY:—Two Silver Medals for the best Sussex Bull, and for the best Cow or Heifer.

RED POLL SOCIETY:—Two Prizes of 5*l* each for the best Red Poll Bull, and for the best Cow or Heifer.

ABERDEEN ANGUS CATTLE SOCIETY:—A Gold Medal, value 10*l*, for the best animal of the Aberdeen Angus breed.

ENGLISH ABERDEEN ANGUS CATTLE ASSOCIATION:—A Gold Medal for the best animal of the opposite sex to that of the animal awarded the Gold Medal of the Aberdeen Angus Cattle Society.

GALLOWAY CATTLE SOCIETY:—Prize of 25*l* for the best Galloway animal.

BRITISH HOLSTEIN CATTLE SOCIETY:—Silver Medals to the First Prize winners in the Classes for British Holstein Cattle.

ENGLISH JERSEY CATTLE SOCIETY:—Two Prizes of 5*l* each for the best Jersey Bull, and for the best Cow or Heifer.

ROYAL JERSEY AGRICULTURAL SOCIETY:—Ten Guinea Prize for the best Jersey Cow and two of her progeny.

ENGLISH GUERNSEY CATTLE SOCIETY:—Two prizes of 25*l* each for the best Guernsey Bull and for the best Cow or Heifer.

ENGLISH KERRY AND DEXTER CATTLE SOCIETY:—Two Challenge Cups, value 25*l* 5*s* each, for the best Kerry Bull, Cow, or Heifer, and for the best Dexter Bull, Cow, or Heifer.

ENGLISH JERSEY CATTLE SOCIETY:—Gold Medal (or 10*l* in money), Silver Medal and Bronze Medal for the three best Jersey Animals in the Butter-test Classes.

SHEEP.

SHROPSHIRE SHEEP BREEDERS' ASSOCIATION:—Prize of 25*l* for the best Shropshire Ram.

SOUTHDOWN SHEEP SOCIETY:—A Gold Medal (or 10*l* 10*s* in money) for the best Southdown Ram; and Silver Medal (or 1*l* in money) for the best Pen of Ewes or Ewe Lambs.

HAMPSHIRE DOWN SHEEP BREEDERS' ASSOCIATION:—Prize of 10*l* for the best Hampshire Down Ram Lamb, Pen of Ram Lambs, or Ewe Lambs.

CANADIAN INDUSTRIAL EXHIBITION:—Silver Medal for the best exhibit of Dorset Horn Sheep.

KERRY HILL (WALES) FLOCK BOOK SOCIETY:—Two prizes of 25*l* each for the best Kerry Hill (Wales) Ram and the best Pen of Ewes or Ewe Lambs.

LINCOLN LONG-WOOL SHEEP BREEDERS' ASSOCIATION:—Prize of 5*l*, for the best Lincoln Ram.

SOCIETY OF BORDER LEICESTER SHEEP BREEDERS:—A Challenge Cup, value 50*l*, for the best Border Leicester Sheep, and a Gold Medal to the winner.

KENT OR ROMNEY MARSH SHEEP BREEDERS' ASSOCIATION:—Prize of 10*l* 10*s* for the best Kent or Romney Marsh Ram.

PIGS.

NATIONAL PIG BREEDERS ASSOCIATION:—Six Gold Medals (or 5*l* 5*s* in money) for the best Large White Boar and Sow, Middle White Boar and Sow, and Tamworth Boar and Sow.

BRITISH BERKSHIRE SOCIETY:—Prize of 5*l* 5*s* for the best Berkshire Boar or Sow.

LARGE BLACK PIG SOCIETY:—Prize of 10*l* for the best Large Black Boar; and a Challenge Cup, value twenty guineas, for the best Large Black Sow.

LINCOLNSHIRE CURLY-COATED PIG BREEDERS' ASSOCIATION:—Two Prizes of 2*l* 5*s* each, for the best Lincolnshire Curly-coated Boar and the best Sow.

HORSES (£3,735).

SHIRE.	Prizes		
	1st £	2nd £	3rd £
STALLION, foaled in 1911 ¹ . . .	20	10	5
STALLION, foaled in 1912 . . .	20	10	5
STALLION, foaled in 1911 . . .	20	10	5
FILLY, foaled in 1913 ¹ . . .	20	10	5
FILLY, foaled in 1912 . . .	20	10	5
FILLY, foaled in 1911 . . .	20	10	5
MARE, foaled in or after 1910 (with foal at foot) . . .	20	10	5
MARE, foaled in or before 1909 (with foal at foot) . . .	20	10	5
COLT FOAL, produce of mare in above classes . . .	10	5	3
FILLY FOAL, produce of mare in above classes . . .	10	5	3
GELDING, foaled in or before 1911 ¹ . . .	15	10	5

CLYDESDALE.²

STALLION, foaled in 1913 . . .	20	10	5
STALLION, foaled in 1912 . . .	20	10	5
STALLION, foaled in 1911 . . .	20	10	5
FILLY, foaled in 1913 . . .	20	10	5
FILLY, foaled in 1912 . . .	20	10	5
FILLY, foaled in 1911 . . .	20	10	5
MARE (with foal at foot) . . .	20	10	5
FOAL, produce of mare in above class . . .	10	5	3
GELDING, foaled in or before 1911 ² . . .	15	10	5

SUFFOLK.³

STALLION, foaled in 1913 . . .	20	10	5
STALLION, foaled in 1912 . . .	20	10	5
STALLION, foaled in 1911 . . .	20	10	5
FILLY, foaled in 1913 . . .	20	10	5
FILLY, foaled in 1912 . . .	20	10	5
FILLY, foaled in 1911 . . .	20	10	5
MARE (with foal at foot) . . .	20	10	5
FOAL, produce of Mare in above class . . .	10	5	3

HUNTERS.⁴

THOROUGHBRED COLT, foaled in 1913, entered or eligible for entry in the G.S.B. (likely to make a Hunter Stallion) . . .	20	10	5
COLT OR GELDING, foaled in 1913 . . .	20	10	5
GELDING, foaled in 1912 . . .	20	10	5
GELDING, foaled in 1911 . . .	20	10	5
FILLY, foaled in 1913 . . .	20	10	5
FILLY, foaled in 1912 . . .	20	10	5
FILLY, foaled in 1911 . . .	20	10	5
THOROUGHBRED MARE, en- tered or eligible for entry in the G.S.B. (with foal at foot), up to weight . . .	20	10	5

Two Prizes of £5 each are also
offered in this class: (I.) for
the best Colt Foal, and (II.)
for the best Filly Foal.

HUNTERS¹—continued.

	Prizes		
	1st £	2nd £	3rd £
MARE (Novice), foaled in or after 1906 (with foal at foot), up to from 12 to 14 st. . .	20	10	5
MARE (Novice), foaled in or after 1906 (with foal at foot), up to more than 14 st. . .	20	10	5
MARE (with foal at foot), up to from 12 to 14 st. . .	20	10	5
MARE (with foal at foot), up to more than 14 st. . .	20	10	5
COLT FOAL, produce of Mare in above classes . . .	10	5	3
FILLY FOAL, produce of Mare in above classes . . .	10	5	3

POLO AND RIDING
PONIES.⁵

COLT OR GELDING, foaled in 1913 . . .	10	5	3
COLT OR GELDING, foaled in 1912 . . .	10	5	3
STALLION, foaled in or before 1911, not exceeding 15 h. . .	15	10	5
FILLY, foaled in 1913 . . .	10	5	3
FILLY, foaled in 1912 . . .	10	5	3
FILLY OR GELDING, foaled in 1911 . . .	10	5	3
MARE, foaled in or after 1908 (with foal at foot), not ex- ceeding 14.2 h. . .	15	10	5
MARE, foaled in or before 1907 (with foal at foot), not ex- ceeding 14.2 h. . .	15	10	5

CLEVELAND BAY OR
COACH HORSE.

STALLION, any age . . .	15	10	5
MARE (with foal at foot) . . .	15	10	5

HACKNEYS.⁶

STALLION, foaled in 1913 . . .	15	10	5
STALLION, foaled in 1912 . . .	15	10	5
STALLION, foaled in or before 1911 . . .	15	10	5
FILLY, foaled in 1913 . . .	15	10	5
FILLY, foaled in 1912 . . .	15	10	5
FILLY, foaled in 1911 . . .	15	10	5
MARE (with foal at foot), over 14, and not over 15.2 h. . .	15	10	5
MARE (with foal at foot), over 15.2 h. . .	15	10	5
FOAL, produce of Mare in above classes . . .	10	5	3

HACKNEY PONY.

STALLION, foaled in or before 1911, not over 14 h. . .	10	5	3
COLT, FILLY, OR GELDING, foaled in 1912, not over 13.2 h. . .	10	5	3
FILLY OR GELDING, foaled in 1911, not over 13.3 h. . .	10	5	3
MARE (with foal at foot), not over 14 h. . .	10	5	3

¹ Offered by the Shire Horse Society.

² £50 provided by the Clydesdale Horse Society.

³ £50 provided by the Suffolk Horse Society.

⁴ £100 and £80 provided by two members of the R.A.S.E.

⁵ £30 provided by the National Pony Society, and £30 provided by three members of the R.A.S.E.

⁶ £30 provided through the Hackney Horse Society.

	Prizes		
	1st	2nd	3rd
SHETLAND PONY.			
STALLION, foaled in or before 1911, not over 10½ h . . .	10	5	3
MARE (with foal at foot), not over 10½ h . . .	10	5	3

WELSH COB.¹			
STALLION, foaled in or before 1911, not exceeding 11 h . . .	10	5	3
BROOD MARE, foaled in or before 1911 (with foal at foot), not exceeding 14½ hands . . .	10	5	3

WELSH MOUNTAIN PONY.¹			
STALLION, foaled in 1911 (not exceeding 11½ h), or 1912 (not exceeding 11½ h) . . .	10	5	3
STALLION (Novice), foaled in or before 1910, not having won a Class Prize of the value of £4 previous to May 20th, 1914, not exceeding 12 hands . . .	5	3	2
STALLION, foaled in or before 1910, not exceeding 12 hands . . .	10	5	3
COLT, FILLY, OR GELDING, foaled in 1913, not exceeding 11 hands . . .	5	3	2
FILLY, foaled in 1911 (not exceeding 11½ h), or 1912 (not exceeding 11½ h) . . .	10	5	3
MARE (Novice), foaled in or before 1910 (with foal at foot), not having won a Class Prize of the value of £4 as a Brood Mare previous to May 20th, 1914, not exceeding 12 hands . . .	5	3	2
MARE, foaled in or before 1910 (with foal at foot), not exceeding 12 h . . .	10	5	3
MARE, foaled in or before 1910 (with foal at foot), not exceeding 12½ h . . .	10	5	3

	Prizes				
	1st	2nd	3rd	4th	5th
HUNTER RIDING CLASSES.²					
MARE OR GELDING, foaled in 1910, up to from 12 to 14 st. . .	15	10	5	5	5
MARE OR GELDING, foaled in 1910, up to more than 14 st. . .	15	10	5	5	5
MARE OR GELDING (Novice), foaled in or before 1900, up to from 12 to 14 st. . .	15	10	5	5	5
MARE OR GELDING (Novice), foaled in or before 1900, up to more than 14 st. . .	15	10	5	5	5
MARE OR GELDING, foaled in or before 1910, up to from 12 to 13.7 st. . .	20	15	10	5	5
MARE OR GELDING, foaled in or before 1910, up to more than 13.7 and not over 15 st. . .	20	15	10	5	5
MARE OR GELDING, foaled in or before 1910, up to more than 15 st. . .	20	15	10	5	5

	Prizes		
	1st	2nd	3rd
HACK AND RIDING PONY CLASSES.¹			
MARE OR GELDING, foaled in or before 1910, not exceeding 12½ h To be ridden by a child born in or after 1903 . . .	10	5	3
MARE OR GELDING, foaled in or before 1910, over 12½ and not exceeding 13½ h To be ridden by a child born in or after 1900 . . .	10	5	3
MARE OR GELDING, foaled in or before 1910 over 13½ and not exceeding 14½ h . . .	15	10	5
MARE OR GELDING, foaled in or before 1910, over 14½ and not exceeding 15½ h . . .	15	10	5
MARE OR GELDING, foaled in or before 1910, over 15½ h . . .	15	10	5

	Prizes			
	1st	2nd	3rd	4th
DRIVING CLASSES.²				
<i>To be driven in Single Harness.</i>				
MARE OR GELDING (Novice), not over 14 h . . .	15	10	5	5
MARE OR GELDING (Novice), over 14 and not over 15 h . . .	15	10	5	5
MARE OR GELDING (Novice), over 15 h . . .	15	10	5	5
MARE OR GELDING, not over 14 h . . .	15	10	5	5
MARE OR GELDING, over 14 and not over 15 h . . .	15	10	5	5
MARE OR GELDING, over 15 and not over 15½ h . . .	15	10	5	5
MARE OR GELDING over 15½ h . . .	15	10	5	5

<i>To be driven in Double Harness.</i>				
MARES OR GELDINGS, not over 15 h . . .	15	10	5	5
MARES OR GELDINGS, over 15 h . . .	15	10	5	5

<i>To be driven Tandem.</i>				
MARES OR GELDINGS, not over 15 h . . .	15	10	5	5
MARES OR GELDINGS, over 15 h . . .	15	10	5	5

<i>Four-in-hand Teams.</i>				
MARES OR GELDINGS, to be shown before a Coach . . .	20	15	10	5

	Prizes				
	1st	2nd	3rd	4th	5th
JUMPING COMPETITIONS.²					
A MARE OR GELDING . . .	25	10	5	5	5
B MARE OR GELDING (First Prize Winners in Class A not eligible) . . .	20	10	5	5	5
C MARE OR GELDING (First Prize Winners in Classes A and B not eligible) . . .	15	10	5	5	5
D CHAMPION CLASS, Mare or Gelding . . .	25	15	10	5	5

¹ £45 provided by the Welsh Pony and Cob Society, and £21 by the Shrewsbury Local Committee.

² Provided by the Shrewsbury Local Committee.

CATTLE (£3,118).

SHORTHORN.	PRIZES		
	1st	2nd	3rd
BULL, calved in 1909, 1910, or 1911	10	6	4
BULL, calved on or between Jan. 1, 1912 and March 31, 1912	10	6	4
BULL, calved on or between April 1, 1912, and Dec. 31, 1912 ¹	10	6	4
BULL, calved on or between Jan. 1, 1913, and March 31, 1913	10	6	4
BULL, calved on or between April 1, 1913, and Dec. 31, 1913 ¹	10	6	4
TWO SPECIAL PRIZES of 10 ¹ and 5 ¹ for the two best Bulls calved in 1913, the property of an Exhibitor residing in Shropshire ²			
GROUP CLASS, for the best collection of either three or four Bulls, bred by Exhibitor ³	15	10	-
COW, in-milk, calved in or before 1910	10	6	4
HEIFER, in-milk, calved in 1911 ⁴	10	6	4
HEIFER, calved on or between Jan. 1, 1912, and March 31, 1912	10	6	4
HEIFER, calved on or between April 1, 1912, and Dec. 31, 1912 ¹	10	6	4
HEIFER, calved on or between Jan. 1, 1913, and March 31, 1913	10	6	4
HEIFER, calved on or between April 1, 1913, and Dec. 31, 1913 ¹	10	6	4
GROUP CLASS, for the best collection of either three or four Cows or Heifers, bred by Exhibitor	15	10	-

DAIRY SHORTHORN.

BULL, calved in 1913 ¹	10	6	4
BULL, calved in 1913 ²	10	6	4
DAIRY COW, in-milk, calved in or before 1909 ³	10	6	4
DAIRY COW, in-milk, calved in 1910	10	6	4
DAIRY HEIFER, in-milk, calved in or after 1911	10	6	4
Milk Yield Prizes	10	6	4

SHORTHORN DAIRY

CATTLE.⁵

DAIRY COW, in-milk, calved in or before 1910	10	6	4
DAIRY HEIFER, in-milk, calved in or after 1911	10	6	4

LINCOLNSHIRE RED SHORTHORN.⁶

	PRIZES		
	1st	2nd	3rd
BULL, calved in 1908, 1909, 1910 or 1911	10	6	4
BULL, calved in 1912	10	6	4
BULL, calved in 1913	10	6	4
COW, in-milk, calved in or before 1910	10	6	4
COW OR HEIFER, in-milk, calved in or before 1911, showing the best milking properties	10	6	4
HEIFER, in-milk, calved in 1911	10	6	4
HEIFER, calved in 1912	10	6	4
HEIFER, calved in 1913	10	6	4
Milk Yield Prizes	10	6	4

HEREFORD.⁷

BULL, calved in 1909, 1910 or 1911	10	6	4
BULL, calved in 1912	10	6	4
BULL, calved in Jan or Feb 1913	10	6	4
BULL, calved in 1913, on or after Mar. 1st	10	6	4
BULL (Novice) calved in 1913	10	6	4
GROUP CLASS consisting of three Bulls, bred by Exhibitor	10	6	4
GROUP CLASS consisting of Bull and Cow, and their Offspring calved in 1914	15	10	5
COW, in-milk, calved in or before 1910	10	6	4
COW OR HEIFER, in-milk, calved in or before 1911, showing the best milking qualities	10	6	4
HEIFER, in-milk, calved in 1911	10	6	4
HEIFER, calved in 1912	10	6	4
HEIFER (Novice) calved in 1912	10	6	4
HEIFER, calved in 1913	10	6	4
HEIFER (Novice) calved in 1913	10	6	4
GROUP CLASS consisting of three Heifers bred by Exhibitor	10	6	4

DEVON.⁸

BULL, calved in 1909, 1910 or 1911	10	6	4
BULL, calved in 1912	10	6	4
BULL, calved in 1913	10	6	4
COW OR HEIFER, in-milk, calved in or before 1911	10	6	4
DAIRY COW, in-milk, calved in or before 1911	10	6	4
HEIFER, calved in 1912	10	6	4
HEIFER, calved in 1913	10	6	4
Milk Yield Prizes	10	6	4

SOUTH DEVON.⁹

BULL, calved in or before 1912	10	6	-
BULL, calved in 1913	10	6	-
COW OR HEIFER, in-milk, calved in or before 1911	10	6	-
HEIFER, calved in 1912	10	6	-
HEIFER, calved in 1913	10	6	-
Milk Yield Prizes	10	6	4

¹ Offered by the Shorthorn Society.

² £5 offered through the Shropshire and West Midland Agricultural Society.

³ Offered by the Dairy Shorthorn (Contes's Herd Book) Association.

⁴ Offered by the Shorthorn Society.

⁵ Offered by two Members of the R A S E.

⁶ £80 provided by the Lincolnshire Red Shorthorn Association.

⁷ £110 provided by the Hereford Herd Book Society, and £50 by the Shrewsbury Local Committee.

⁸ £50 provided by the Devon Cattle Breeders' Society.

⁹ £20 provided by the South Devon Herd Book Society.

LONGHORN. ¹	Prizes		
	1st	2nd	3rd
BULL, calved in 1909, 1910, 1911, or 1912	10	6	4
BULL, calved in 1913	10	6	4
COW OR HEIFER, in-milk, calved in or before 1911	10	6	1
HEIFER, calved in 1912 or 1913	10	6	4
Milk Yield Prizes	10	6	4

SUSSEX. ²			
BULL, calved in 1909, 1910, or 1911	10	6	4
BULL, calved in 1912	10	6	4
BULL, calved in 1913	10	6	4
COW OR HEIFER, in-milk, calved in or before 1911	10	6	4
HEIFER, calved in 1912	10	6	4
HEIFER, calved in 1913	10	6	4

WELSH. ³			
BULL, calved on or after Dec. 1, 1908, and before Dec. 1, 1911	10	6	4
BULL, calved on or after Dec. 1, 1911, and before Dec. 1, 1912	10	6	4
BULL, calved on or after Dec. 1, 1912, and before Dec. 1, 1913	10	6	4
COW OR HEIFER, in-milk, calved before Dec. 1, 1910	10	6	4
HEIFER, in-milk, calved on or after Dec. 1st, 1910, and before Dec. 1st, 1911	10	6	4
HEIFER, calved on or after Dec. 1, 1911, and before Dec. 1, 1912	10	6	4
HEIFER, calved on or after Dec. 1st, 1912, and before Dec. 1, 1913	10	6	4

RED POLL. ⁴			
BULL, calved in 1909, 1910, or 1911	10	6	4
BULL, calved in 1912	10	6	4
BULL, calved in 1913	10	6	4
COW OR HEIFER, in-milk, calved in or before 1911	10	6	4
HEIFER, calved in 1912	10	6	4
HEIFER, calved in 1913	10	6	4
Milk Yield Prizes	10	6	4

ABERDEEN ANGUS. ⁵			
BULL, calved on or after Dec. 1, 1908, and before Dec. 1, 1911	10	6	4
BULL, calved on or after Dec. 1, 1911, and before Dec. 1, 1912	10	6	4
BULL, calved on or after Dec. 1, 1912, and before Dec. 1, 1913	10	6	4
COW OR HEIFER, in-milk, calved before Dec. 1, 1911	10	6	4
HEIFER, calved on or after Dec. 1, 1911, and before Dec. 1, 1912	10	6	4
HEIFER, calved on or after Dec. 1, 1912, and before Dec. 1, 1913	10	6	4

GALLOWAY. ⁶			
BULL, calved on or after Dec. 1, 1908, and before Dec. 1, 1912	10	6	4
BULL, calved on or after Dec. 1, 1912, and before Dec. 1, 1913	10	6	4
COW OR HEIFER, in-milk, calved before Dec. 1, 1911	10	6	4
HEIFER, calved on or after Dec. 1, 1911, and before Dec. 1, 1912	10	6	4
HEIFER, calved on or after Dec. 1, 1912, and before Dec. 1, 1913	10	6	4

HIGHLAND.			
BULL, calved in or before 1913	10	-	-
COW OR HEIFER, in-milk	10	-	-

AYRSHIRE. ⁷			
BULL, calved in or before 1913	10	6	4
COW OR HEIFER, in-milk	10	6	4
COW OR HEIFER, in-calf	10	6	4
Milk Yield Prizes	10	6	4

BRITISH HOLSTEIN. ⁸			
BULL, calved in or before 1911	10	6	4
BULL, calved in 1912 or 1913	10	6	4
COW, in-milk, calved in or before 1910	10	6	4
HEIFER, in-milk, calved in 1911 or 1912	10	6	4
HEIFER, calved in 1913	10	6	4
Milk Yield Prizes	10	6	4

JERSEY. ⁹			
BULL, calved 1909, 1910, or 1911	10	6	4
BULL, calved in 1912	10	6	4
BULL, calved in 1913	10	6	4
COW, in-milk, calved in or before 1910	10	6	4
HEIFER, in-milk, calved in 1911	10	6	4
HEIFER, in-milk, calved in 1912	10	6	4
HEIFER, calved in 1913	10	6	4
COW OR HEIFER, in-milk, bred by Exhibitor, sired in Great Britain or Ireland	10	6	4
Milk Yield Prizes	10	6	4

GUERNSEY. ¹⁰			
BULL, calved in 1909, 1910 or 1911	10	6	4
BULL, calved in 1912	10	6	4
BULL, calved in 1913	10	6	4
COW, in-milk, calved in or before 1909	10	6	4
COW OR HEIFER, in milk, calved in 1910 or 1911	10	6	4
HEIFER, calved in 1912	10	6	4
HEIFER, calved in 1913	10	6	4
Milk Yield Prizes	10	6	4

KERRY. ¹¹			
BULL, calved in 1909, 1910, 1911, or 1912	10	6	4
COW, in-milk, calved in or before 1910	10	6	4
HEIFER, in-milk, calved in 1911	10	6	4
HEIFER, calved in 1912 or 1913	10	6	4
Milk Yield Prizes	10	6	4

¹ £20 provided by the Longhorn Cattle Society.

² £20 provided by the Sussex Herd Book Society.

³ £10 provided by the Welsh Black Cattle Society.

⁴ £20 provided by the Red Poll Cattle Society.

⁵ £20 provided by the Aberdeen Angus Cattle Society.

⁶ £20 provided by the Galloway Cattle Society.

⁷ £20 provided by the Ayrshire Cattle Herd Book Society.

⁸ £20 provided by the British Holstein Cattle Society.

⁹ £20 provided by the English Jersey Cattle Society.

¹⁰ £40 provided by the English Guernsey Cattle Society.

¹¹ £30 provided by the English Kerry and Dexter Cattle Society.

DEXTER.¹
Same as for Kerrics.

	Prizes		
	1st	2nd	3rd
BUTTER TESTS.²	£	£	£
Cow, exceeding 900 lb. live weight	15	10	5
Cow, not exceeding 900 lb. live weight	15	10	5

SHEEP (£2,171).

OXFORD DOWN.			
SHEARLING RAM	10	5	3
RAM LAMB ³	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

SHROPSHIRE. ⁴			
	1st	2nd	3rd
TWO-SHEAR RAM	10	5	3
SHEARLING RAM	10	5	3
THREE SHEARLING RAMS (Novice).	10	5	3
FIVE SHEARLING RAMS	15	10	5
THREE RAM LAMBS	10	5	3
THREE RAM LAMBS, Novice	10	5	3
SHEARLING EWE	15	10	5
THREE SHEARLING EWES	10	5	3
TEN SHEARLING EWES	15	10	5
TEN BREEDING EWES, which have reared lambs in 1914	15	10	5
THREE EWE LAMBS	10	5	3
THREE YEARLING EWES, shown in their wool	15	10	5
GROUP CLASS, of not less than four Shropshire Sheep	15	10	5

SOUTHDOWN.			
	1st	2nd	3rd
TWO-SHEAR RAM ⁵	10	5	3
SHEARLING RAM	10	5	3
THREE SHEARLING RAMS ⁶	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

HAMPSHIRE DOWN.			
	1st	2nd	3rd
TWO-SHEAR RAM ⁷	10	5	3
SHEARLING RAM	10	5	3
RAM LAMB ⁸	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

SUFFOLK.

	Prizes		
	1st	2nd	3rd
TWO-SHEAR RAM ⁹	10	5	3
SHEARLING RAM	10	5	3
RAM LAMB ⁹	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

DORSET DOWN.⁸

SHEARLING RAM	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3

DORSET HORN.¹⁰

SHEARLING RAM, dropped after Nov. 1, 1911	10	5	3
THREE RAM LAMBS, dropped after Nov. 1, 1913	10	5	3
THREE SHEARLING EWES, dropped after Nov. 1, 1912	10	5	3
THREE EWE LAMBS, dropped after Nov. 1, 1913	10	5	3

RYELAND.¹⁰

RAM, TWO-SHEAR and upwards	10	5	3
SHEARLING RAM	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

KERRY HILL (WALES).¹¹

RAM, TWO-SHEAR and upwards	10	5	3
SHEARLING RAM	10	5	3
SHEARLING RAM (Novice).	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE SHEARLING EWES (Novice)	10	5	3
THREE EWE LAMBS	10	5	3

LINCOLN.¹²

TWO-SHEAR RAM	10	5	3
SHEARLING RAM	10	5	3
FIVE SHEARLING RAMS	15	10	5
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3
THREE YEARLING EWES, shown in their wool	10	5	3

LEICESTER.¹³

SHEARLING RAM	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

- ¹ £30 provided by the English Kerry and Dexter Cattle Society.
- ² Offered by the English Jersey Cattle Society.
- ³ Offered by the Oxford Down Sheep Breeders' Association.
- ⁴ £23 provided by the Shropshire Sheep Breeders' Association, and £180 by the Shrewsbury Local Committee.
- ⁵ Offered by the Southdown Sheep Society.
- ⁶ Offered by the Hampshire Down Sheep Breeders' Association.
- ⁷ Offered by the Suffolk Sheep Society.
- ⁸ £15 provided by the Dorset Down Sheep Breeders' Association.
- ⁹ £18 provided by the Dorset Horn Sheep Breeders' Association.
- ¹⁰ £27 provided by the Ryeland Flock Book Society.
- ¹¹ £10 provided by the Kerry Hill (Wales) Flock Book Society, and £28 by the Shrewsbury Local Committee.
- ¹² £28 provided by the Lincoln Long-Wool Sheep Breeders' Association.
- ¹³ £18 provided by the Leicester Sheep Breeders' Association.

	Prizes		
	1st	2nd	3rd
BORDER LEICESTER.¹			
RAM, TWO SHEAR and upwards	10	5	3
SHEARLING RAM	10	5	3
SHEARLING EWE	10	5	3

WENSLEYDALE.²			
RAM, TWO-SHEAR and upwards, entered or eligible for entry in the Wensleydale Blue-faced Flock Book	10	5	3
SHEARLING RAM	10	5	3
THREE SHEARLING RAMS, entered or eligible for entry in the Wensleydale Blue-faced Flock Book	10	5	3
THREE SHEARLING EWES	10	5	3

LONK.³			
RAM, SHEARLING and upwards	10	5	-
THREE SHEARLING EWES	10	5	-

DERBYSHIRE GRITSTONE.			
RAM, SHEARLING and upwards	10	-	-
THREE SHEARLING EWES	10	-	-

KENT OR ROMNEY MARSH.⁴			
TWO SHEAR RAM	10	5	3
SHEARLING RAM	10	5	3
FIVE SHEARLING RAMS	15	10	5
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

COTSWOLD.⁵
Same as for Leicester.

DEVON LONG-WOOL.
Same as for Derbyshire Gritstone.

SOUTH DEVON.⁶			
TWO-SHEAR RAM	10	5	-
SHEARLING RAM	10	5	-
THREE RAM LAMBS	10	5	-
THREE SHEARLING EWES	10	5	-
THREE EWE LAMBS	10	5	-

DARTMOOR.⁷			
RAM, TWO-SHEAR and upwards	10	5	-
SHEARLING RAM	10	5	-
THREE SHEARLING EWES	10	5	-

	Prizes		
	1st	2nd	3rd
EXMOOR.⁸			
RAM, TWO SHEAR and upwards	10	5	3
SHEARLING RAM	10	5	3
THREE SHEARLING EWES	10	5	3

CHEVIOT.⁹
Same as for Border Leicester.

HERDWICK.¹⁰
Same as for Dartmoor.

WELSH MOUNTAIN.¹¹			
RAM, TWO SHEAR and upwards	10	5	3
SHEARLING RAM	10	5	3
RAM LAMB	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

BLACK-FACED MOUNTAIN.			
RAM, SHEARLING and upwards	10	-	-
SHEARLING EWE	10	-	-

PIGS (£762 5s.).

Large White ¹²	.	.	.	.	.	.	.	.	.
Middle White ¹³	.	.	.	.	.	.	.	.	.
Tamworth ¹⁴	.	.	.	.	.	.	.	.	.
Berkshire ¹⁵	.	.	.	.	.	.	.	.	.
Large Black ¹⁶	.	.	.	.	.	.	.	.	.
Lincolnshire Curly-Coated ¹⁷	.	.	.	.	.	.	.	.	.

} Prizes see below.

In each of the above Breeds the following prizes will be given:—

	1st	2nd	3rd
BOAR, farrowed in 1910, 1911, or 1912	10	5	3
BOAR, farrowed in 1913	10	5	3
BOAR, farrowed in 1914	10	5	3
BREEDING SOW, farrowed in 1910, 1911, or 1912	10	5	3
SOW, farrowed in 1913	10	5	3
THREE SOW PIGS, farrowed in 1914	10	5	3

¹ £18 provided by the Society of Border Leicester Sheep Breeders.

² £18 provided by the Wensleydale Blue-faced Sheep Breeders' Association.

³ £5 provided by the Lonk Sheep Breeders' Association.

⁴ £48 provided by the Kent or Romney Marsh Sheep Breeders' Association.

⁵ £18 provided by the Cotswold Sheep Society.

⁶ £30 provided by the South Devon Flock Book Association.

⁷ £15 provided by the Dartmoor Sheep Breeders' Association.

⁸ £18 provided by the Exmoor Horn Sheep Breeders' Society.

⁹ £18 provided by Breeders of Cheviot Sheep.

¹⁰ £15 provided by Breeders of Herdwick Sheep.

¹¹ £17 provided by the Welsh Mountain Sheep Flock Book Society, and £10 by the Shrewsbury Local Committee.

¹² £72 provided by the National Pig Breeders' Association.

¹³ £18 provided by the British Berkshire Society.

¹⁴ £18 provided by the Large Black Pig Society.

¹⁵ £18 provided by the Lincolnshire Curly-Coated Pig Breeders' Association.

POULTRY

(£493 15s. 6d.)

Prizes of 30s., 20s., and 10s. are offered in each class for the best COCK, HEN, COCKEREL, and PULLET of the following Breeds:—

Game, Old English.
Game, Indian.
Game, Modern.
Game Black Sumatra.
Langshan.
Croad Langshan.

A SPECIAL PRIZE of 1l. for the best Croad Langshan.¹

Plymouth Rock, White.

A SILVER SERVIETTE RING for the best White Plymouth Rock.²

Plymouth Rock, Barred.

A SPECIAL PRIZE for the Best Barred Plymouth Rock.³

Plymouth Rock, Buff.

A SPECIAL PRIZE for the best Buff Plymouth Rock.⁴

Plymouth Rock, Blue.
Plymouth Rock, any other colour.
Wyandotte, Gold or Silver Laced.
Wyandotte, White.

A SPECIAL PRIZE of 10s. and the "Visiting Cup," for the best White Wyandotte.⁵

Wyandotte, Black.

A SPECIAL PRIZE of 10s. for the best Black Wyandotte.⁶

Wyandotte, Partridge.

A SPECIAL PRIZE for the best Partridge Wyandotte.⁷

Wyandotte, Columbian.
Wyandotte, Blue.
Wyandotte, any other variety.
Orpington, Buff.

A PIECE OF PLATE, value 3l. 3s. for the best Buff Orpington.⁸

Orpington, White.

TWO SERVIETTE RINGS for the best White Orpington.⁹

POULTRY—continued.

Orpington, Black.

A SPECIAL PRIZE for the best Black Orpington.¹⁰

Orpington, Blue.

Orpington, Spangled.

A SPECIAL PRIZE for the best Spangled Orpington.¹¹

Orpington, any other colour.
Leghorn, White.
Leghorn, Brown.
Leghorn, Black.
Leghorn, any other colour.
Minors.

Scots Dumpy.

Dorking, Silver Grey

Dorking, Dark Coloured.

TWO PRIZES 1l. 1s. each, for the best Silver Grey and Dark Coloured Dorking.¹²

Sussex, Red.

Sussex, Light.

Sussex, Speckled.

THREE SERVIETTE RINGS: (1) for best Red, (2) for best Light, (3) for best Speckled Sussex.¹³

British Rhode Island Red.

A SPECIAL PRIZE for the best British Rhode Island Red.¹⁴

Ancona.

Yokohama.

A SILVER MEDAL for the best Yokohama.¹⁵

Brahma.

Cochin.

Maline.

SILVER MEDAL for the best Maline.¹⁶

Campine.

SILVER MEDAL for best Campine.¹⁷

Faverolle.

Houdan.

Any other Breed.

Bantams, Old English Game.

Bantams, Modern Game.

Bantams, Sebright.

Scotch Grey.

Bantams, Wyandotte.

Bantams, Yokohama.

Bantams, Japanese.

Bantams, any other variety.

- ¹ Offered by the Croad Langshan Club.
- ² Offered by the White Plymouth Rock Club.
- ³ Offered by the Barred Plymouth Rock Club.
- ⁴ Offered by the Buff Plymouth Rock Club.
- ⁵ Offered by the White Wyandotte Club.
- ⁶ Offered by the Black Wyandotte Club.
- ⁷ Offered by the Partridge Wyandotte Club.
- ⁸ Offered by the Buff Orpington Club.
- ⁹ Offered by the White Orpington Club.
- ¹⁰ Offered by the Black Orpington Club.
- ¹¹ Offered by the Spangled Orpington Club.
- ¹² Offered by the Dorking Club.
- ¹³ Offered by the Sussex Poultry Club.
- ¹⁴ Offered by the British Rhode Island Red Club.
- ¹⁵ Offered by the Yokohama Club.
- ¹⁶ Offered by the Malines Poultry Club.
- ¹⁷ Offered by the Campine Club.

POULTRY—continued

DUCKS.

**DRAKE OR YOUNG DRAKE,
DUCK OR DUCKLING**

Aylebury.

Rouen

Blue Orpington.

Buff Orpington.

A SPECIAL PRIZE of 1l. 1s. for the best Buff Orpington.¹

Any other breed.

GEESE.

GANDER AND GOOSE.

Embsen.

Toulouse.

TURKEYS.

Cock and Hen.

White.

Any other variety.

PRODUCE (£399 2s.).

BUTTER.

Prizes
1st 2nd 3rd
£ £ £

TWO POUNDS OF FRESH BUTTER, without any salt, made up in plain pounds, from the milk of Channell Island, Devon, or South Devon Cattle and their crosses . . . 1 2 1

TWO POUNDS OF FRESH BUTTER, without any salt, made up in plain pounds, from the milk of Cattle of any breed or cross other than those mentioned . . . 4 2 1

TWO POUNDS OF FRESH BUTTER, slightly salted, made up in plain pounds, from the milk of Channell Island, Devon, or South Devon Cattle and their crosses . . . 4 2 1

TWO POUNDS OF FRESH BUTTER, slightly salted, made up in plain pounds, from the milk of Cattle of any breed or cross other than those mentioned . . . 1 2 1

THREE POUNDS OF FRESH BUTTER, slightly salted, made up in pounds in the most attractive marketable designs. The designs as well as the quality will be taken into account by the Judge . . . 4 2 1

THREE POUNDS OF FRESH BUTTER, slightly salted, made up in pounds and packed in non-returnable boxes for transmission by rail or parcel post. The packing, the box, and the quality will be taken into account by the Judge who will open the exhibits . . . 4 2 1

	Prizes		
	1st	2nd	3rd
CHEESE (made in 1911)			
THREE CHEDDAR, not less than 50 lb. each . . .	5	3	2
THREE CHEDDAR TRUCKERS . . .	1	2	1
THREE CHESHIRE (coloured), of not less than 40 lb. each . . .	5	3	2
THREE CHESHIRE (uncoloured), of not less than 40 lb. each . . .	5	3	2
THREE DOUBLE GLOUCESTER, not less than 23 lb. each . . .	5	3	2
THREE STAFFORDSHIRE or DERBYSHIRE . . .	1	2	1
THREE STILTON . . .	1	2	1
THREE WENSLEYDALE (Stilton shape) . . .	3	2	1
THREE CAIRPHILLY . . .	4	2	1

BACON & HAMS.

TWO SIDES OF BACON, pale dried, Wiltshire shape, with Ham attached . . .	3	2	1
TWO SIDES OF BACON, smoke dried, Wiltshire shape, with Ham attached . . .	3	2	1
TWO SIDES OF BACON, pale dried, Wiltshire shape, hamless . . .	3	2	1
TWO SIDES BACON smoke dried, Wiltshire shape, hamless . . .	3	2	1
TWO HAMS, pale dried, not exceeding 14 lb. weight . . .	3	2	1
TWO HAMS, smoke dried, not exceeding 14 lb. weight . . .	3	2	1
TWO HAMS, pale dried, exceeding 14 lb. weight . . .	3	2	1
TWO HAMS, smoke dried, exceeding 14 lb. weight . . .	3	2	1

CIDER AND PERRY.

OASK OF DRY CIDER, made in 1913 . . .	3	2	1
OASK OF SWEET CIDER, made in 1913 . . .	3	2	1
OASK OF CIDER, made previous to 1913 . . .	3	2	1
ONE DOZ. DRY CIDER, made in 1913 . . .	3	2	1
ONE DOZ. SWEET CIDER, made in 1913 . . .	3	2	1
ONE DOZ. CIDER, made previous to 1913 . . .	3	2	1
ONE DOZ. DRY PERRY . . .	3	2	1
ONE DOZ. SWEET PERRY . . .	3	2	1

A CHALLENGE CUP for the best exhibit of Cider.²

WOOL (of 1914 Crop).

Three Fleeces in each entry.

PURE BRED CLASHMS.

OXFORD DOWN . . .	3	2	1
SHROPSHIRE . . .	3	2	1
SOUTHDOWN . . .	3	2	1
HAMPSHIRE DOWN . . .	3	2	1
RYELAND . . .	3	2	1
LEICESTER . . .	3	2	1
BORDER LEICESTER . . .	3	2	1
WENSLEYDALE BLUE-FACED . . .	3	2	1
KENT OR ROMNEY MARSH . . .	3	2	1
COOTSWOLD . . .	3	2	1
DARTMOOR . . .	3	2	1
EXMOOR HORN . . .	3	2	1
WELSH . . .	3	2	1

¹ Offered by the Buff Orpington Duck Club.

² Offered by the Cider Growers of the West of England.

³ The Second and Third Prizes are provided by the respective Flock Book Societies.

WOOL <i>continued</i>	Prizes		
	1st	2nd	3rd
CROSS BREED CLASSES	£	£	£
First Cross between two distinct breeds of Short Wool	3	2	1
First Cross between two distinct breeds of Long Wool	3	2	1
First Cross of any Long and Short Wool	3	2	1
First Cross of pure bred sheep of which one must be Mountain or Moorland	3	2	1
Primitive British bred sheep or First Cross from them	3	2	1

HIVES, HONEY, AND

BEE APPLIANCES.	s.	s.	s.
Collection of HIVES	80	40	20
FRAME HIVE	20	15	10
Do for Cottagers' use	20	15	10
HONEY EXTRACTOR	15	10	-
OBSERVATORY HIVE (not less than 8 frames)	20	15	10
USEFUL APPLIANCES.	10	-	-

HONEY—(Local Classes).

Open to members of Shropshire Bee Keepers' Association only.

	s.	s.	s.
4 Sections of COMB HONEY, about 4 lb.	10/-	7/6	3/6
EXTRACTED, LIGHT-COLOURED HONEY about 4 lb.	10/-	7/6	3/6
Collective Exhibit of COMB HONEY; EXTRACTED, LIGHT-COLOURED, MEDIUM OR DARK-COLOURED HONEY; and 1 lb. of WAX	20/-	10/-	5/-

HONEY—(Open Competition)

For the purposes of Classes for Honey the United Kingdom has been divided into Two Districts:—

1. Counties of Cheshire, Cumberland, Derby, Durham, Hereford, Lancashire, Leicester, Lincoln, Monmouth, Northumberland, Nottingham, Rutland, Salop, Stafford, Warwick, Westmorland, Worcester, Yorkshire, the Isle of Man, Ireland, Scotland, or Wales.
 2. Counties of Bedford, Berks, Bucks, Cambridge, Cornwall, Devon, Dorset, Essex, Gloucester, Hampshire, Herts, Hunts, Isle of Wight, Kent, Middlesex, Norfolk, Northampton, Oxford, Somerset, Suffolk, Surrey, Sussex, or Wiltshire
- For each of the above Districts the following four Classes and Prizes, for Honey of any year, have been provided:—

	Prizes		
	1st	2nd	3rd
12 Sections of COMB HONEY, about 12 lb.	20	15	10
EXTRACTED, LIGHT-COLOURED HONEY, about 12 lb.	20	15	10
EXTRACTED MEDIUM OR DARK-COLOURED HONEY, about 12 lb.	20	15	10
GRANULATED HONEY, about 12 lb.	20	15	10

MISCELLANEOUS.

Shallow frames of COMB HONEY, for extracting	20	15	10
Jars of HEATHER HONEY, about 8 lb	20	15	10
Jars of HEATHER MIXTURE EXTRACTED HONEY, about 8 lb.	20	15	10
DISPLAY OF HONEY	30	20	10
2 lb. of WAX	10	7/6	5
3 lb. of WAX, in marketable form, suitable for retail trade	10	7/6	5
HONEY VINEGAR, 1 quart.	7/6	5	-
MEAD, 1 quart	7/6	5	-
OTHER PRACTICAL EXHIBITS	10	5	-
OTHER SCIENTIFIC EXHIBITS	10	5	-

HORSE-SHOEING COMPETITIONS (£81).

(Open to the United Kingdom.)

CLASS I. Hunters. CLASS II. Roadsters. CLASS III. Cart Horses.

Prizes in each Class as follows:—1st, 5*l.*; 2nd, 3*l.* 10*s.*; 3rd, 2*l.* 10*s.*; 4th, 2*l.*; 5th, 1*l.* 10*s.*; 6th, 1*l.*

A Gold Medal will be presented to the First Prize Winner in each Class.¹

A Silver Medal and a Bronze Medal in each Class to be competed for by Members of the National Master Farriers' Association.²

BUTTER-MAKING COMPETITIONS (£56).

The Competitions on Tuesday, Wednesday and Thursday will be open only to those resident in Shropshire, Staffordshire, North Wales, Cardiganshire, Radnorshire, who have been pupils or received instruction in Dairying at their respective County Council Institutes or Dairy Schools since the 1st day of January, 1911, and who have not, previous to the 30th of May, 1914, won a Prize in an open class at the Shows of the R.A.S.E., Bath and West and Southern Counties Society, Royal Counties Society, or at the London Dairy Show.

The Competition on Saturday will be open only to the Prize Winners in the previous competitions

The following Prizes are offered on each day:—1st Prize, 5*l.*; 2nd Prize, 3*l.*; 3rd Prize, 2*l.*; 4th Prize, 1*l.*; 5th Prize, 10*s.* Certificates of Merit will be given to those candidates obtaining 56 points out of a possible 100.

Special Prizes of 4*l.*, 3*l.*, 2*l.*, and 1*l.* for candidates resident in the County of Montgomery.³

¹ Offered by the Worshipful Company of Farriers.

² Offered by the National Master Farriers' Association.

³ Offered by the Montgomery County Agricultural Committee

FARM PRIZES (£470).¹

The following Prizes are offered by the Shrewsbury Local Committee for the best-managed Farms in Shropshire, Montgomeryshire, and Staffordshire.

CLASS I.—GRAZING OR DAIRY FARM, 150 acres or over (exclusive of Sheep Run), of which two-thirds must be permanent grass 1st Prize, 75*l.*; 2nd Prize, 50*l.*; 3rd Prize 20*l.* (Thirteen entries)

CLASS II.—GRAZING OR DAIRY FARM, not less than 50 acres and under 150 acres (exclusive of Sheep Run) of which two-thirds must be permanent grass 1st Prize, 50*l.*; 2nd Prize, 30*l.*, 3rd Prize, 10*l.* (Five entries)

CLASS III.—FARM, chiefly Arable, 150 acres or over (exclusive of Sheep Run), 1st Prize, 75*l.*; 2nd Prize, 50*l.*, 3rd Prize, 20*l.* (Thirteen entries)

CLASS IV.—FARM, chiefly Arable not less than 50 acres and under 150 acres (exclusive of Sheep Run) 1st Prize, 50*l.*; 2nd Prize, 30*l.*, 3rd Prize, 10*l.* (Six entries)

ARBORICULTURAL EXHIBITION.¹

Prizes amounting to 250*l.*

DOG SHOW.

The Shropshire and West Midland Agricultural Society and the National Terrier Club will hold a Championship Dog Show within the Showyard, on Thursday and Friday, July 2nd and 3rd.

¹ Offered by the Shrewsbury Local Committee.

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STATEMENT OF PRIVILEGES OF MEMBERSHIP.

CHEMICAL.—Advice to Buyers of Fertilisers and Feeding Stuffs; Analyses; Sample of Order Form, &c. (page ii.).

BOTANICAL.—Information on purchase and value of Seeds and other matters; Suggestions and Samples of Order Form (page vii.).

ZOOLOGICAL.—Information on Pests of Farm Crops, Fruit and Forest Trees, and Domesticated Animals, &c. (page xi.).

VETERINARY.—Privileges and Information (page xii.)

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THOMAS McROW,
Secretary.

16 BEDFORD SQUARE, W.C.

January, 1914.

Telegraphic Address: "PRACTICE, LONDON." Telephone Number: "GERRARD 3675."

MEMBERS' PRIVILEGES OF CHEMICAL ANALYSIS.

(Applicable only to the case of persons who are not commercially engaged in the manufacture or sale of any substance sent for Analysis.)

THE COUNCIL HAVE FIXED THE FOLLOWING

RATES OF CHARGES FOR CHEMICAL ANALYSIS

TO MEMBERS OF THE SOCIETY.

These privileges are applicable only when the Analyses are for *bond fide* agricultural purposes, and are required by Members of the Society for their own use and guidance in respect of farms or land in their own occupation and within the United Kingdom.

The Analyses are given on the understanding that they are required for the individual and sole benefit of the Member applying for them, and must not be used for other persons, or for commercial purposes.

The Analyses and reports may not be communicated to either vendor or manufacturer, except in cases of dispute.

Land or estate agents, bailiffs, and others, when forwarding samples, are required to state the names of those Members on whose behalf they apply.

	£	s.	d.
1.—An opinion on the purity of any Fertiliser or Feeding Stuff (so far as this can be given without detailed analysis)	1	0	
2.—Determination of any <i>one</i> ordinary constituent in a Fertiliser or Feeding Stuff	2	6	
3.—Determination of Potash	5	0	
4.—Commercial Analysis of any ordinary Fertiliser or Feeding Stuff	5	0	
5.—Full Analysis of any compound Fertiliser or Feeding Stuff	10	0	
6.—Analysis of any other material in ordinary use for agricultural purposes	10	0	
7.—Analysis of Milk, Cream, Butter, or other Dairy produce from Members' own farms	2	6	
(N.B.—Samples in any way connected with the Sale of Food and Drugs Acts are not undertaken for analysis.)			
8.—Analysis of Water	1	10	0
9.—Analysis of Soil—determination of Lime only	10	0	
10.—Analysis of Soil—partial	1	0	0
11.—Analysis of Soil—complete	3	0	0
12.—Consultation by letter or personal appointment	5	0	

OPINION OF VALUE.

With the analysis will be given, as far as possible, an opinion as to whether an article analysed is worth the price asked for it, or not, provided the cost of the same, together with guarantee (if any) and other particulars relating to the purchase, be given at the time.

ALL SAMPLES AND COMMUNICATIONS, TOGETHER WITH FEES FOR ANALYSIS, TO BE ADDRESSED TO—

**DR. VOELCKER, Analytical Laboratory,
1, Tudor Street, London, E.C.**

Instructions for Selecting and Sending Samples for Analysis.

GENERAL RULES.—(1.) A sample taken for analysis should be fairly *representative of the bulk* from which it has been drawn.—(2.) The sample should reach the Analyst *in the same condition* that it was in at the time when drawn.

When Fertilisers are delivered in bags, select four or five of these from the bulk, and either turn them out on a floor and rapidly mix their contents, or else drive a shovel into each bag and draw out from as near the centre as possible a couple of shovelfuls of the manure, and mix these quickly on a floor.

Halve the heap obtained in either of these ways, take one half (rejecting the other) and mix again rapidly, flattening down with the shovel any lumps that appear. Repeat this operation until at last only some three or four pounds are left.

From this fill three tins, holding from 1 lb. to 1 lb. each, mark, fasten up and seal each of these. Send one for analysis, and retain the others for reference.

Or,—the manure may be put into glass bottles provided with well-fitting corks; the bottles should be labelled and the corks sealed down. The sample sent for analysis can be packed in a wooden box and sent by post or rail.

When manures are delivered in bulk, portions should be successively drawn from *different parts* of the bulk, the heap being turned over now and again. The portions drawn should be thoroughly mixed, subdivided, and, finally, samples should be taken as before, except that when the manure is coarse and bulky it is advisable to send larger samples than when it is in a finely divided condition.

Linseed, Cotton, and other Feeding Cakes.—If a single cake be taken, three strips should be broken off right across the cake, and from the middle portion of it, one piece to be sent for analysis, and the other two retained for reference. Each of the three pieces should be marked, wrapped in paper, fastened up, and sealed. The piece forwarded for analysis can be sent by post or rail.

A more satisfactory plan is to select four to six cakes from different parts of the delivery, then break off a piece about four inches wide from the middle of each cake, and pass these pieces through a cake-breaker. The broken cake should then be well mixed and three samples of about 1 lb. each should be taken and kept in tins or bags, duly marked, fastened, and sealed as before. One of these lots should be sent for analysis, the remaining two being kept for reference. It is advisable also with the broken pieces to send a small strip from an unbroken cake.

Feeding Meals, Grain, &c.—Handfuls should be drawn from the centre of half a dozen different bags of the delivery; these lots should then be well mixed, and three 1-lb. tins or bags filled from the heap, each being marked, fastened up, and sealed. One sample is to be forwarded for analysis and the others retained for reference.

Soils.—Have a wooden box made 6 inches in length and width, and from 9 to 12 inches deep, according to the depth of soil and subsoil of the field. Mark out in the field a space of about 12 inches square; dig round in a slanting direction a trench, so as to leave undisturbed a block of soil and its subsoil 9 to 12 inches deep; trim this block to make it to fit into the wooden box, invert the open box over it, press down firmly, then pass a spade under the box and lift it up, gently turn over the box, nail on the lid, and send by rail. The soil will then be received in the position in which it is found in the field.

In the case of very light, sandy, and porous soils, the wooden box may be at once inverted over the soil, forced down by pressure, and then dug out.

Waters.—Samples of water are best sent in glass-stoppered Winchester bottles, holding half a gallon. One such bottle is sufficient for a single sample. Care should be taken to have these scrupulously clean. In taking a sample of water for analysis it is advisable to reject the first portion drawn or pumped, so as to obtain a sample of the water when in ordinary flow. The bottle should be rinsed out with the water that is to be analysed, and it should be filled nearly to the top. The stopper should be secured with string, or be tied over with linen or soft leather. The sample can then be sent carefully packed either in a wooden box with sawdust, &c., or in a hamper with straw.

Milk.—A pint bottle should be sent in a wooden box.

GENERAL INSTRUCTIONS. Time for Taking Samples.—All samples, both of fertilisers and feeding stuffs, should be taken as soon after their delivery as possible, and should reach the Analyst within *ten days* after delivery of the article. In every case it is advisable that the Analyst's certificate be received before a fertiliser is sown or a feeding stuff is given to stock.

Procedure in the Event of the Vendor wishing Fresh Samples to be Drawn.—Should a purchaser find that the Analyst's certificate shows a fertiliser or feeding stuff not to come up to the guarantee given him, he may inform the vendor of the result and complain accordingly. He should then send to the vendor *one* of the two samples which he has kept for reference. If, however, the vendor should demand that a fresh sample be drawn, the purchaser must allow this, and also give the vendor an opportunity of being present, either in person or through a representative whom he may appoint. In that case three samples should be taken in the presence of both parties with the same precautions as before described, *each* of which should be duly packed up, labelled and sealed by both parties. One of these is to be given to the vendor, one is to be sent to the Analyst, and the third is to be kept by the purchaser for reference or future analysis if necessary.

Suggestions to Purchasers of Fertilisers and Feeding Stuffs.

Purchasers are recommended in all cases to insist on having an **INVOICE**, and to see that such invoice contains the following particulars:—

In the case of **Fertilisers**:—

- (1) The name of the Fertiliser.
- (2) Whether the Fertiliser is artificially compounded or not.
- (3) The minimum analysis of the Fertiliser in respect of its principal fertilising ingredients.

In the case of artificially prepared **Feeding Stuffs** for Cattle:—

- (1) The name of the article.
- (2) The description of the article—whether it has been prepared (a) from one substance or seed, or (b) from more than one substance or seed.
- (3) The percentages of oil and albuminoids guaranteed.

For example:

- (a) An invoice describing an article as "Linseed Cake" implies a warranty that the article is pure, i.e., is prepared from linseed only; "Cotton Cake" (whether decorticated or undecorticated), and "Rape Cake" (for feeding purposes), would come under a similar category.

Purchasers are reminded that the use of such terms as "95 per cent.," "Oil Cake," &c., affords no security against adulteration. The adoption of the ORDER FORM issued by the Society is therefore strongly recommended.

- (b) In the case of a Compound Cake or Feeding Stuff, a Vendor is compelled by the Fertilisers and Feeding Stuffs Act of 1906 to state the percentages of oil and albuminoids guaranteed, and that it is prepared from more than one substance, but he is not required to specify the particular materials used in its preparation. Purchasers are recommended, therefore, to buy Mixed Feeding Cakes, Meals, &c., with a guaranteed analysis. Any statements in the invoice as to the component parts of such Mixed Cakes or Meal will take effect as a warranty, as also will any statements in an invoice, circular, or advertisement as to the percentages of nutritive and other ingredients in any article sold for use as food for cattle.

Members of the Society are strongly recommended not only to see that the invoices given to them accurately describe the goods they have ordered, but to make all their orders subject to the *Analysis and Report of the Consulting Chemist of the Royal Agricultural Society of England*. Copies of a Form of Order (see page v.) for this purpose may be obtained on application to the Secretary.

Attention is particularly directed to the recommendations below as to the qualities of Fertilisers and Feeding Stuffs which purchasers should demand.

Conditions of Purchase and Sale.

FERTILISERS.

Raw Bones, Bone-meal, or Bone-dust to be guaranteed "PURE," and to contain not less than 45 per cent. of Phosphate of Lime, and not less than 4 per cent. of Ammonia.

Steamed or "Degelatinized" Bones to be guaranteed "PURE," and to contain not less than 55 per cent. of Phosphate of Lime, and not less than 1 per cent. of Ammonia.

Mineral Superphosphate of Lime to be guaranteed to contain a certain percentage of "Soluble Phosphate." [From 25 to 28 per cent. of Soluble Phosphate is an ordinarily good quality.]

Dissolved Bones to be guaranteed to be "made from raw bone and acid only," and to be sold as containing stated minimum percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia.

Compound Artificial Manures, Bone Manures, Bone Compounds, &c., to be sold by analysis stating the minimum percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia contained.

Basic Slag to be guaranteed to be sufficiently finely ground that 80 to 90 per cent. passes through a sieve having 10,000 meshes to the square inch, and to contain a certain percentage of Phosphoric Acid or its equivalent in Phosphate of Lime. [The highest grades range from 17 to 20 per cent. of Phosphoric Acid; medium grades 14 to 16 per cent.; and low grades from 10 to 12 per cent. of Phosphoric Acid.]

Peruvian Guano to be described by that name, and to be sold by analysis stating the minimum percentages of Phosphates and Ammonia.

Sulphate of Ammonia to be guaranteed "PURE," and to contain not less than 24 per cent. of Ammonia.

Nitrate of Soda to be guaranteed "PURE," and to contain 85 per cent. of Nitrate of Soda.

Kainit to be guaranteed to contain 23 per cent. of Sulphate of Potash.

All Fertilisers to be delivered in good and suitable condition for sowing.

FEEDING STUFFS.

Linseed Cake, Cotton Cake (Decorticated and Undecorticated), and Rape Cake (for feeding purposes) to be pure, i.e., prepared only from the one kind of seed from which their name is derived; and to be in sound condition. The percentages of oil and albuminoids guaranteed must also be stated. The Report of the Consulting Chemist of the Royal Agricultural Society of England to be conclusive as to the "purity" or otherwise of any feeding stuffs.

Mixed Feeding Cakes, Meals, &c., to be sold on a guaranteed analysis giving the percentages of oil and albuminoids, to be sound in condition, and to contain nothing of an injurious nature, or ingredients that are worthless for feeding purposes.

ORDER FORM (SAMPLE)

FOR FERTILISERS OR FEEDING STUFFS.



To _____
 Address _____

Date _____

Please supply me for Delivery

Cwt. of

At _____ per ton.

GUARANTEED to be in accordance with the conditions specified on the back hereof, relating to this article, and subject to the analysis and report of the Consulting Chemist of the Royal Agricultural Society of England.

(Signature of Member)

NOTE.—Copies of this Form will be forwarded to Members on application to the Secretary.

[P.T.O.]

CONDITIONS OF PURCHASE AND SALE.

FERTILISERS.

Raw Bones, Bone-meal, or Bone-dust to be guaranteed "PURE," and to contain not less than 45 per cent. of Phosphate of Lime, and not less than 4 per cent. of Ammonia.

Steamed or "Degelatinized" Bones to be guaranteed "PURE," and to contain not less than 55 per cent. of Phosphate of Lime, and not less than 1 per cent. of Ammonia.

Mineral Superphosphate of Lime to be guaranteed to contain a certain percentage of "Soluble Phosphate." [From 25 to 28 per cent. of Soluble Phosphate is an ordinarily good quality.]

Dissolved Bones to be guaranteed to be "made from raw bone and acid only," and to be sold as containing stated minimum percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia.

Compound Artificial Manures, Bone Manures, Bone Compounds, &c., to be sold by analysis stating the minimum percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia contained.

Basic Slag to be guaranteed to be sufficiently finely ground that 80 to 90 per cent. passes through a sieve having 10,000 meshes to the square inch, and to contain a certain percentage of Phosphoric Acid or its equivalent in Phosphate of Lime. [The highest grades range from 17 to 20 per cent. of Phosphoric Acid; medium grades 14 to 16 per cent.; and low grades from 10 to 12 per cent. of Phosphoric Acid.]

Peruvian Guano to be described by that name, and to be sold by analysis stating the minimum percentages of Phosphates and Ammonia.

Sulphate of Ammonia to be guaranteed "PURE," and to contain not less than 24 per cent. of Ammonia.

Nitrate of Soda to be guaranteed "PURE," and to contain 95 per cent. Nitrate of Soda.

Kainit to be guaranteed to contain 23 per cent. of Sulphate of Potash.

All Fertilisers to be delivered in good and suitable condition for sowing.

FEEDING STUFFS.

Linseed cake, Cotton cake (Decorticated and Undecorticated), and **Rape cake** (for feeding purposes) to be pure, *i.e.*, prepared *only* from the one kind of seed from which their name is derived; and to be in sound condition. The percentages of oil and albuminoids guaranteed must also be stated. The Report of the Consulting Chemist of the Royal Agricultural Society of England to be conclusive as to the "purity" or otherwise of any feeding stuffs.

Mixed Feeding-cakes, Meals, &c., to be sold on a guaranteed analysis, giving the percentages of oil and albuminoids, to be in sound condition, and to contain nothing of an injurious nature, or ingredients that are worthless for feeding purposes.

MEMBERS' BOTANICAL PRIVILEGES.

THE COUNCIL HAVE FIXED THE FOLLOWING

RATES OF CHARGES FOR THE EXAMINATION OF PLANTS AND SEEDS

BY THE SOCIETY'S BOTANIST.

The charge for examination must be paid at the time of application, and the carriage of all parcels must be prepaid. When, however, *bond fide* inquiries require no special investigation the fees will be returned with the reply.

- 1.—Report on the purity and germinating capacity of samples of agricultural seeds, with a statement as to the nature and amount of the impurities or adulterants present . 1s.
 - 2.—Report on the constitution of mixtures of grass seeds and an opinion as to their suitability for temporary leys, permanent pastures, &c. 1s.
 - 3.—Identification of weeds and poisonous plants with suggestions for their eradication 1s.
 - 4.—Report on the fungoid diseases affecting farm crops, with an account of the methods suitable for their treatment, where known 1s.
 - 5.—Report on the natural herbage of a district as a guide to the formation of permanent pastures 1s.
 - 6.—Report on the suitability or otherwise of the different varieties of the chief farm crops for local conditions (where the information is available), stating their average cropping capacity as compared with other varieties, their quality, power of resistance to various diseases, and general purity to type 1s.
 - 7.—Reports on any other matters of a botanical nature of interest to agriculturists 1s.
-

PURCHASE OF SEEDS.

The purchaser should obtain from the vendor, by invoice or other writing, the proper designation of the seeds he buys, with a guarantee of the percentage of purity and germination, and of its freedom from ergot, and, in the case of clover, from the seeds of dodder and broom-rape.

Copies of the "Order Form and Conditions of Purchase and Sale of Seeds" (see page ix) may be obtained by Members on application to the Secretary, at 16 Bedford Square, London, W.C.

MEMBERS' BOTANICAL PRIVILEGES (*continued*).

THE SAMPLING OF SEEDS.

The utmost care should be taken to secure a fair and honest sample. This should be drawn from the bulk delivered to the purchaser, and not from the sample sent by the vendor.

When legal evidence is required, the sample should be taken from the bulk, and placed in a sealed bag in the presence of a witness. Care should be taken that the sample and bulk be not tampered with after delivery, or mixed or brought in contact with any other sample or bulk.

At least one ounce of grass and other small seeds should be sent, and two ounces of cereals and the larger seeds. When the bulk is obviously impure, the sample should be at least double the amount specified. Grass seeds should be sent at least four weeks, and seeds of clover and cereals two weeks before they are to be used.

The exact name under which the sample has been sold and analysed should accompany it.

REPORTING THE RESULTS.

The Report will be made on a schedule in which the nature and amount of impurities will be stated, and the number of days each sample has been under test, with the percentage of the seeds which have germinated.

"Hard" clover seeds, though not germinating within the time stated, will be considered good seeds, and their percentage separately stated.

The impurities in the sample, including the chaff of the species tested, will be specified in the schedule, and only the percentage of the pure seed of that species will be reported upon; but the REAL VALUE of the sample will be stated. The Real Value is the combined percentages of purity and germination, and is obtained by multiplying these percentages and dividing by 100; thus in a sample of Meadow Fescue having 88 per cent. purity and 95 per cent. germination, 88 multiplied by 95 gives 8,360, and this divided by 100 gives 83·6, the Real Value.

SELECTING SPECIMENS OF PLANTS.

When a specimen is sent for determination, the whole plant should be taken up and the earth shaken from the roots. If possible, the plants must be in flower or fruit. They should be packed in a light box, or in a firm paper parcel.

Specimens of diseased plants or of parasites should be forwarded as fresh as possible. They should be placed in a bottle, or packed in tinfoil or oil-silk.

All specimens should be accompanied with a letter specifying the nature of the information required, and stating any local circumstances (soil, situation, &c.) which, in the opinion of the sender, would be likely to throw light on the inquiry.

PARCELS OR LETTERS CONTAINING SEEDS OR PLANTS FOR EXAMINATION MUST BE ADDRESSED (CARRIAGE OR POSTAGE PREPAID) TO—

PROFESSOR R. H. BIFFEN, M.A.,
School of Agriculture, Cambridge.

ORDER FORM (SAMPLE)

AND CONDITIONS OF PURCHASE AND SALE OF SEEDS.



FROM

TO

.....

.....

.....

.....

PLEASE SUPPLY me for Delivery the Seeds specified in the ORDER FORM on the back hereof, it being guaranteed that each kind of seed is practically free from impurities: that the Grass seeds are free from Ergot, and the Clovers free from Dodder and Broom Rape seeds: that the germination is not less than is specified on the back hereof: and further that the purchase is subject to the examination and germination tests of the Botanist of the Royal Agricultural Society of England, whose opinion shall be final.

(Signature of Member).....

Date..... [F.T.O.]

NOTE.—Copies of this Form will be forwarded to Members on application to the Secretary.

ORDER.

Quantity

.....Cocksfoot	germinating	90 per cent.
.....Meadow Fescue	„	95 per cent.
.....Tall Fescue	„	90 per cent.
.....Meadow Foxtail	„	70 per cent.
.....Timothy	„	95 per cent.
.....Rough Stalked Meadow Grass	„	80 per cent.
.....Smooth Stalked Meadow Grass	„	70 per cent.
.....Perennial Ryegrass	„	95 per cent.
.....Italian Ryegrass	„	95 per cent.
.....Red Clover	} "Hard" Seeds being included as germinable Seeds	98 per cent.
.....Alsike		98 per cent.
.....White Clover		98 per cent.
.....Trefoil		98 per cent.
.....Yarrow	„	80 per cent.

Variety

.....Wheat	„	98 per cent.
.....Barley	„	98 per cent.
.....Oats	„	98 per cent.
.....Turnips	„	98 per cent.
.....Swede Turnips	„	98 per cent.
.....Cabbage	„	98 per cent.
.....Mangel Wurzel, 75 per cent. of fruits, each containing at least one germinating seed.		
.....		
.....		
.....		
.....		
.....		
.....		

Signature.....

MEMBERS' ZOOLOGICAL PRIVILEGES.

The Council have fixed the charge of 1s. for information to be supplied, by the Society's Zoologist, respecting any injurious (animal, quadruped, bird, insect, worm, &c.) pests.

(1) FARM CROPS.

All the ordinary farm crops are subject to numerous pests, some attacking the roots, some the leaves, others the stem or the blossom. The first necessity is the accurate identification of the pest in any case, for a knowledge of its life-history often suggests a method of dealing with it.

(2) FRUIT TREES.

There are a great number of orchard and bush-fruit pests. Some (codlin moth, pear-midge, &c.) attack the fruit; others (red-spider, aphis, caterpillars, &c.) the leaves; others (woolly aphis, boring beetles, &c.) the stem. Information will be given as to the identity of any pest and the best way of combating it.

(3) FOREST TREES.

Advice will be given with regard to the treatment of forest-tree pests, in plantations, nursery gardens, or ornamental grounds. Such pests may attack the trunks (beech-scale, boring insects, &c.), the leaves (caterpillars aphis, &c.), or the roots (cockchafer, grubs, &c., in young plantations).

(4) DOMESTICATED ANIMALS.

Animal parasites, whether external or internal, may be sent for identification and advice. They include worms, fly-maggots, ticks, lice, &c., and many well-known diseases (warbles, gapes, &c.) are due to them.

Diseases of animals due to other causes should be referred to the Veterinary Department.

N.B.—It is very important that specimens should reach the Zoologist fresh and in good condition. It is often impossible to determine the cause of injury in the case of crushed and shrivelled material. Tin boxes should be used, and some damp blotting-paper inserted to prevent undue drying. In the case of root-pests, the root should be sent with its surrounding soil.

PARCELS OR LETTERS CONTAINING SPECIMENS (CARRIAGE OR POSTAGE PAID) MUST BE ADDRESSED TO—

Mr. CECIL Warburton, M.A.,
School of Agriculture, Cambridge.

MEMBERS' VETERINARY PRIVILEGES.

In order to enable Members to obtain the highest possible Veterinary advice when the necessity arises, the Society has entered into an agreement with the Royal Veterinary College, under which diseased animals may be admitted to the College Infirmary for treatment, and the Professors of the College may be consulted or called upon to investigate outbreaks of disease at greatly reduced fees.

I.—ADMISSION OF SICK OR DISEASED ANIMALS TO THE ROYAL VETERINARY COLLEGE.

Members of the Society have all the privileges of subscribers to the Royal Veterinary College, Camden Town, N.W., so far as the admission for treatment of Cattle, Sheep, and Swine is concerned, without being called upon to pay the annual subscription to the College of two guineas. The charges made by the College for keep and treatment are as follows:—Cattle, 10s. 6d., and Sheep and Pigs, 8s. 6d. per week for each animal.

The full privileges of subscribers, including the examination of horses, and the admission of horses and dogs into the College Infirmary for surgical or medical treatment, on payment of the cost of keep, will be accorded to Members of the Society on payment of a subscription to the College of one guinea instead of two guineas per annum.

II.—FEES FOR CONSULTATIONS, ANALYSES, AND EXAMINATIONS AT THE ROYAL VETERINARY COLLEGE.

The following fees are payable by Members of the Society for services performed at the Royal Veterinary College on their behalf in cases where a visit to the locality is not involved:—

	£	s.	d.
Personal consultation with a Veterinary Professor	10	6	
Consultation by letter	10	6	
Post-mortem examination of an animal and report thereon	1	1	0
Chemical Examination of viscera for any specified metallic poison	10	6	
Chemical Examination of viscera for metallic poisons	1	0	0
Chemical Examination of viscera for vegetable poisons	1	0	0
Chemical Examination of viscera complete, for metals and alkaloids	2	0	0

(The above fees do not apply to cases which involve a visit to the locality.)

III.—INVESTIGATION OF OUTBREAKS OF DISEASE AMONG FARM STOCK.

In the event of any obscure outbreak of disease among Cattle, Sheep, or Swine occurring on the farm of any Member of the Society, application should at once be made to the PRINCIPAL of the ROYAL VETERINARY COLLEGE, CAMDEN TOWN, LONDON, N.W.

The Principal will then instruct an officer of the College to inquire into the outbreak and report to him. He will also fix the amount of remuneration to be paid to the Inspector, whose professional fee will in no case exceed two guineas per day, exclusive of the actual cost of travelling and maintenance.

When it appears, on the report of the Inspector selected, that the outbreak was of an important character or of general interest, the cost of the investigation will be defrayed by the Royal Veterinary College.

PUBLICATIONS OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

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ELEMENTS OF AGRICULTURE: a Text-book prepared under the authority of the Royal Agricultural Society of England by the late W. FREEM, LL.D. Ninth (Revised and Enlarged) Edition (19th Thousand), edited by J. R. LINSWORTH-DAVIS M.A. 692 pp. with 333 Illustrations. 1911. Price 5s. net, bound in cloth.

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The above can be obtained at the Society's House, 16 Bedford Square, London, W.C., through any bookseller, or of Mr. JOHN MURRAY, 50a. Albemarle Street, W.

Copies of pamphlets sold at not less than One Shilling each are obtainable by Members of the Society at half-price on direct application to the Secretary.

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Principal of the Royal Agricultural College, Cirencester, and Professor of Natural History in the University of Bristol

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16 Bedford Square, London, W.G.]

Royal Agricultural Society of England.

FORM OF APPLICATION FOR MEMBERSHIP.

I

of

County in which }
Residence is Situated }

^{or}
Governor

am desirous of becoming a Member* of the Royal Agricultural
Society of England, and engage, when elected, to pay the Annual
Subscription of £†
and to conform to the Rules and Regulations of the Society until the
termination of the year in which I shall withdraw from it by notice, in
writing, to the Secretary.

(Signature)

Date

Nominated by

Elected at the Council Meeting held on

Secretary.

† The Council trust that all Members who are disposed to give a larger annual
Subscription than the minimum of £1 prescribed by the By-laws will be kind enough
to do so, in order that the Society's operations may be maintained.

General Privileges of Governors and Members.

FREE ADMISSION TO SHOWS.

The Society holds every year an Exhibition of Live Stock, Farm Produce, and Implements, to which, and to the unserved portions of the Grand Stands at the Horse Ring, Dairy, and elsewhere, Members are entitled to free admission.

REDUCED RATES FOR ENTRIES AT THE ANNUAL SHOW.

Entries of Horses, Cattle, Sheep, Pigs, Poultry, Produce, &c., can be made by Members at reduced rates. For Implement exhibits the entry-fee of £1 payable in addition to the charges for space is not charged when a partner of the firm is a Member of the Society. Firms and Companies may secure these privileges by the Membership of one or more of their partners.

SOCIETY'S JOURNAL AND OTHER PUBLICATIONS.

Every Member is entitled to receive, without charge, a copy of the Journal of the Society, each Volume of which contains articles and communications by leading authorities on the most important agricultural questions of the day, together with official reports by the Society's Scientific Advisers and on the various departments of the Annual Shows, and other interesting features.

Copies of the Journal may be obtained by Non-Members of the Publisher, Mr. JOHN MURRAY, 50A Albemarle Street, W., at the price of ten shillings per copy.

Copies of the Society's pamphlets, sold at not less than One Shilling each, are obtainable by Members at *half price* on direct application to the Secretary.

LIBRARY AND READING ROOM.

The Society has a large and well-stocked library of standard books on agricultural subjects. A Reading Room is provided, at which the principal agricultural newspapers and other periodicals can be consulted by Members during office hours (10 a.m. to 4 p.m.; Saturdays, 10 a.m. to 2 p.m.).

CHEMICAL PRIVILEGES.

The Society makes annually a considerable grant from its general funds in order that Members may obtain at low rates analyses of feeding stuffs, fertilisers, soils, &c., by the Society's Consulting Chemist (Dr. J. AUGUSTUS VOELCKER, Analytical Laboratory, 1 Tudor Street, London, E.C.). Members may also consult Dr. VOELCKER either personally or by letter at a small fee.

VETERINARY PRIVILEGES.

Members can consult the Professors of the Royal Veterinary College, Camden Town, N.W., at fixed rates of charge, and they have the privilege of sending Cattle, Sheep, and Pigs to the College Infirmary on the same terms as subscribers to the College.

BOTANICAL PRIVILEGES.

Reports can be obtained by Members from the Society's Botanist (Professor R. H. BIFFEN, M.A., School of Agriculture, Cambridge), on the purity and germinating power of seeds, and on diseases or weeds affecting farm crops, at a fee of one shilling in each case.

ZOOLOGICAL PRIVILEGES.

Information respecting any animal (quadruped, bird, insect, worm, &c.) which, in any stage of its life, affects the farm or rural economy generally, with suggestions as to methods of prevention and remedy in respect to any such animal that may be injurious, can be obtained by Members from the Society's Zoologist (Mr. OSCIL WARBURTON, M.A., School of Agriculture, Cambridge) at a fee of one shilling in each case.

GENERAL MEETINGS OF GOVERNORS AND MEMBERS.

The Annual General Meeting of Governors and Members is held in London during the week of the Smithfield Club Show. A General Meeting is usually also held in the Showyard during the week of the Show.

SPECIAL PRIVILEGES OF GOVERNORS.

In addition to the privileges of Members, as described above, Governors are entitled to an extra copy of each Volume of the Journal, to attend and speak at all meetings of the Council, and are alone eligible for election as President, Trustees, and Vice-President. The minimum Annual Subscription of a Governor is £5, with a Life Composition of £50.

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Associated with the University of Bristol, 1910.

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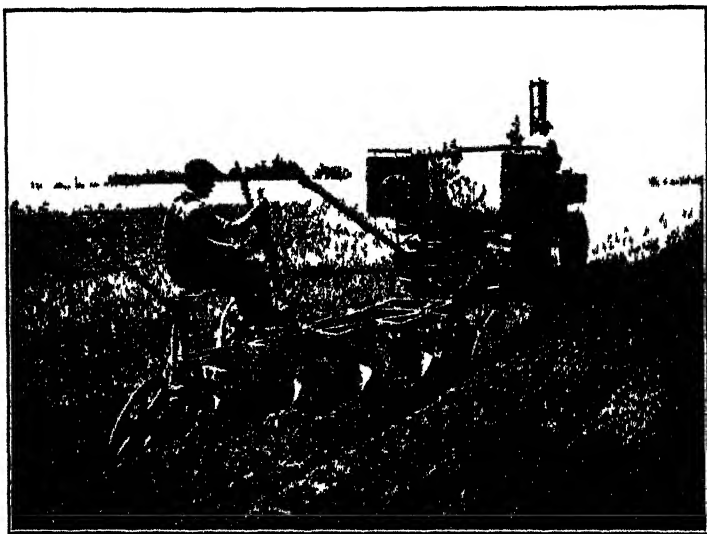
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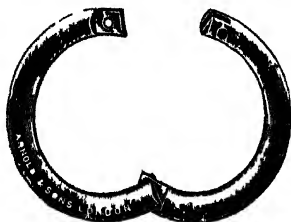
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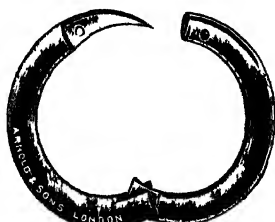
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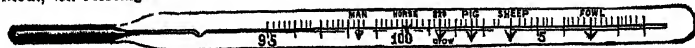


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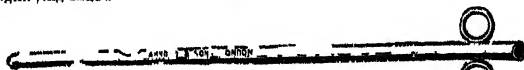
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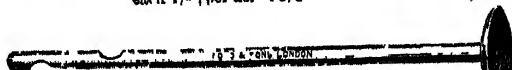


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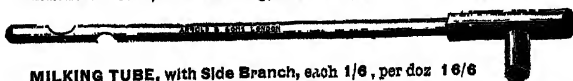
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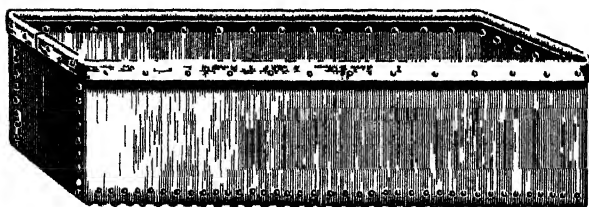


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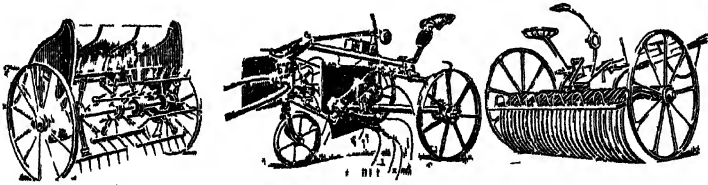
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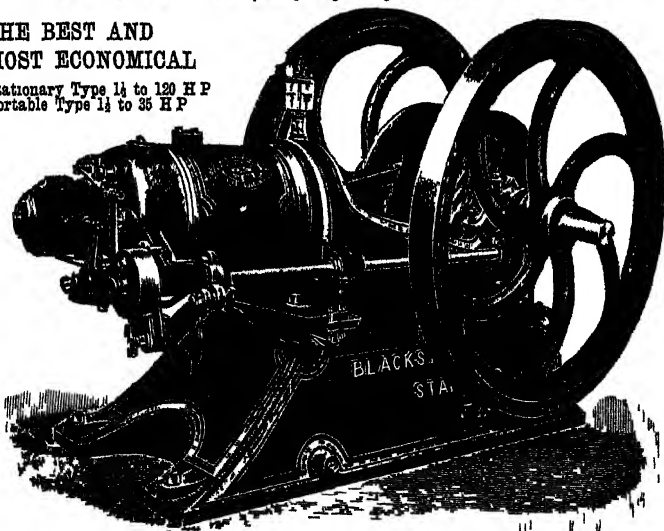
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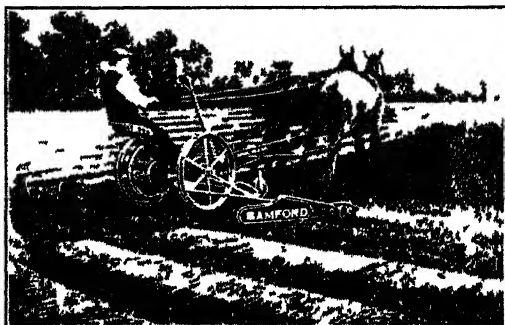


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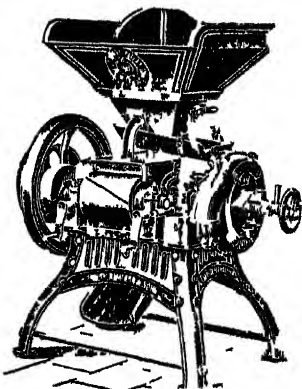
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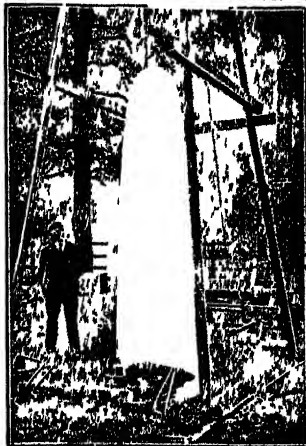
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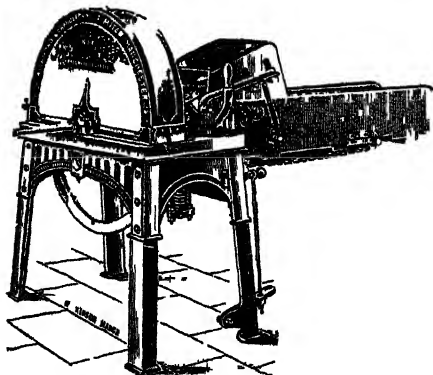
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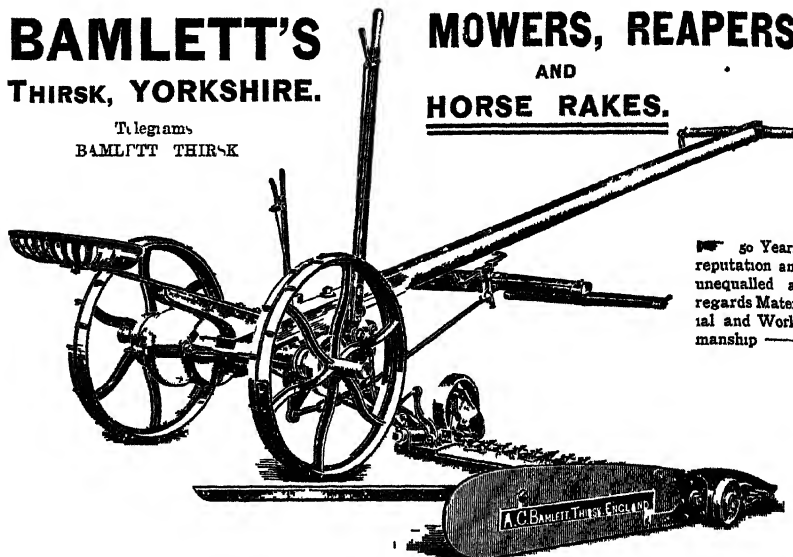
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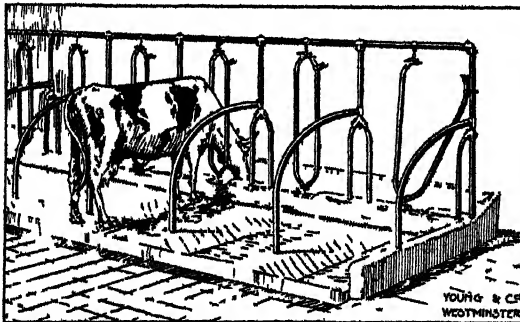
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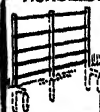
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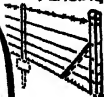
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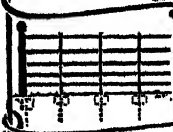
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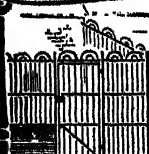
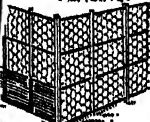


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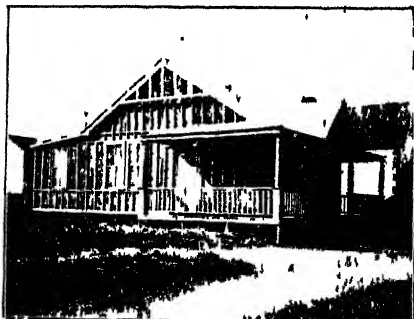
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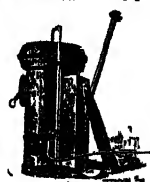
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BRYDON, ROBERT, SEAHAM HARBOUR, COUNTY DURHAM. Breeder of Pedigree Clydesdale Horses. Chief Stud Horses: Silver Cup 11184, and Bonnie Buchlyvie 14032, both of which have been first-prize winners at the Royal and Highland Shows. Bonnie Buchlyvie was also Cawdor Cup winner in 1909. Colts and Fillies on sale. Foreign orders carefully attended to. Inspection invited. Telegrams and Station: Seaham Harbour.

GRAHAM, ROBERT, KALMFLAT FARM, KELSO. Breeder and owner of high-class Clydesdale Stallions, Colts, and Fillies: most fashionable blood. Large selection. Inspection invited. Station: Kelso, N.E. and N.B. Railways.

Various.

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CATTLE.**Aberdeen Angus.**

BALLIOL COLLEGE HERD, founded in 1880. The herd from which so many champions have been sent. Great attention given to purity of blood and milking properties. For catalogue apply to Clement Stephenson, Sandford Villa, Newcastle-on-Tyne. COOPER, SIR GEORGE, HURSLEY PARK, WINCHESTER. All fashionable strains: Prides, Ericas, Miss Burgess. Stock Bulls: Evolsurus, sire of many winners; Black for Ever of Ballindalloch. For catalogue, apply Estate Office, Hursley, Winchester.

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CATTLE—continued.**Aberdeen Angus.**

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CRANWORTH, RIGHT HON. LORD, offers grand dual-purpose Red Polls: milk average of 12 of the cows 8,233½ lb. per cow per annum; 240 distinctions won, including 57 champions, specials, and reserves at the Royal and other Shows. Apply (L. P. Stebbing, Letton, Thetford, England.

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FOWLER AND DE LA PERRELLE, PORTER'S LANE, SOUTHAMPTON, the largest importers of Jerseys and Guernseys. Cows and heifers calving all the year round. Bulls of the best strains. No objection tuberculin test. Moderate prices. Shipping attended to. Horn Trainers and Self-piercing Bull Rings. Telegrams: "Importers. Southampton."

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CATTLE—continued.

Jerseys and Guernseys.

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CATTLE—continued.

Shorthorns.

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CATTLE—continued.**Kerries and Dexters.**

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CATTLE—continued.**Galloways.**

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SHEEP.

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HOXLES, GEORGE, SKIDBY MANOR, NEAR HULL. Pure Lincoln Long-wool Sheep. True type, sound constitutions, lustrous, long wool. Give satisfaction at home and abroad.

SHEEP—continued.

Lincoln Long-wools.

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PIGS.

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HEATHCOT HERD (LATE GOODMEAVY) PEDIGREE LARGE BLACK Pigs. Prizes won at leading shows; also second, third, fourth, fifth prizes young Boar class, Devon County Show, 1912; second, pairs of Gilts, Boars and Gilts for sale. Oscar Muntz, Heathcot, Yelverton, South Devon.

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PIGS continued.

Tamworths.

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PIGS—continued.

Middle Whites.

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MISCELLANEOUS.

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DEBENHAM, MISS, SCHOOL OF RURAL AND DOMESTIC ECONOMY, IPSWICH. 450 acres. Pedigree British Holsteins. Southdown flock, well-bred Goats. Many pure varieties, Poultry, Turkeys, Ducks, Geese. Particulars on application.

MISCELLANEOUS—continued.

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classes of Scotch Cattle and Sheep. Large consignments of pure-bred Galloway Cattle sent to England every year for establishing herds, and also for crossing with white bulls.

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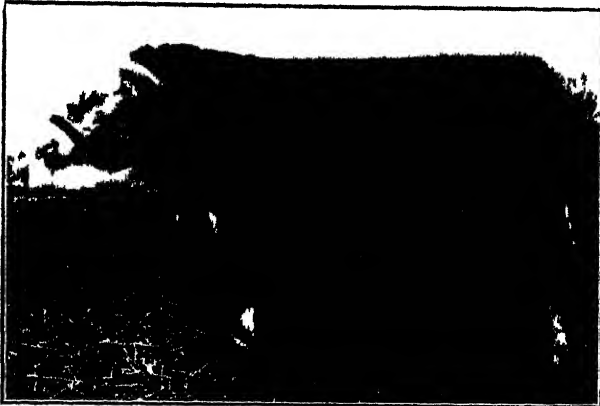
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Won 1st Prize Royal Show, Bristol, 1913.
Sire 1st Prize 4th bred from 1000 gallon Dams on both sides. Dam Hawthorn 7th a 1000 gallon Cow Champion in Dairy Classes at the Royal Show, Norwich 1911.



Granford Wild Eyes 111516.

Sire Famine 101144. Dam, Melody, who gave 122 gallons of Milk in 1908 and won 1st prize in milking trials at both the Royal and the London Dairy Show. Also Second Inspection at London Dairy Show in 1908. Dam, Wild Eyebright 9th by Sir Barnum, 10th 75044. Wild Eyebright 9th gave 11803 lbs of Milk from April 20th, 1910, to January 31st, 1911.



Dairy Prince.

Sire Darius Prince 107233. Dam, Dairy Maid's Belle, gave 8018 lbs of Milk with her first calf. Sire, Darius Prince 1st from Amport Darius, a great 1st. Winner who gave 848 lbs of Milk in a year by a son of Mr. Adams. Royal Champion Dairy Cow Princess Princess.

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Rose 44th.

Sire, Trojan 20th 90851. Dam, Rose 20th. She gave 5184 lbs of Milk in 318 days with her first calf. Won Second Prize in Milking Trials at the London Dairy Show, 1912.



Bertha 13th.

Sire Western Duke 80228. Dam, Bertha 7th by Trojan 7877. Gave 11,887 lbs of Milk with her last calf from May 11th, 1912 to April 8th, 1913. Won Second Prize Inspection at the London Dairy Show, 1912.



Dulce 7th.

Sire Village 1st 9748. Dam, Dulce 6th. Won 1st prize in 1st prize in Shorthorn Cow (the Tring Show, 1912). Gave 12,801 lbs of Milk with her last calf from May 21st, 1912 to May 17th, 1913.



Spotless 51st (2 yrs, 9 mths)

Sire Village Swell 8th 97860. Dam, Spotless 30th. Won Second in Milking Trials and Third Inspection at the London Dairy Show, and First Prize at Tring Show, 1913.



Helpmate 11th.

Sire, Baron Waterloo 51220. Dam, Helpmate 4th. Won prizes 1913; 1st Royal Show, Bristol (dairy cow any breed); 1st Shropshire and West Midland Show; 1st Warwickshire Show. She gave 6764 lbs of Milk with her first calf, from December 16th, 1911, to December 14th, 1912.



Solo 50th.

Sire, Lord Waterloo 6th 80234. Dam, Solo 30th. She gave 10,411 lbs Milk with her last calf from May 27th, 1912, to April 10th, 1913. Won First Prize Horseshed-White and Won Interline Show, 1912.

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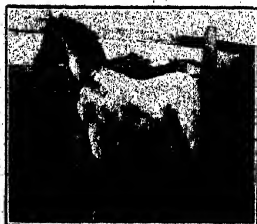
The Property of MISS E. C. V. HUGHES, Bryn Hawddgar, Llanarthney, Carmarthenshire.
(To be seen by appointment only).



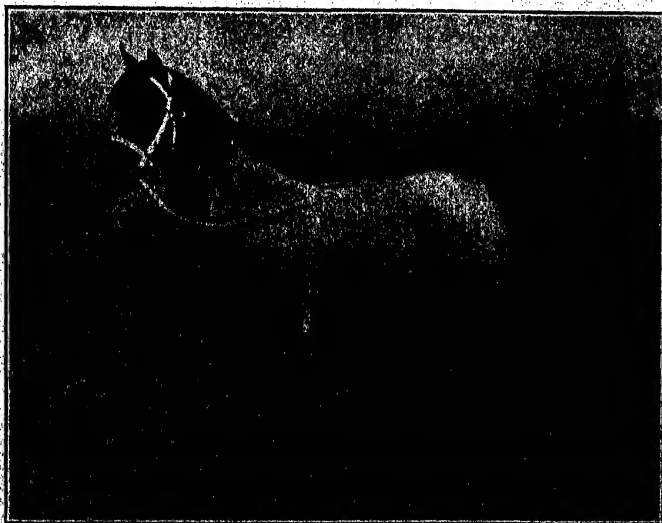
HAWDDGAR MOUNTAIN ECHO.
(Foaled 1912.)



HAWDDGAR MOUNTAIN CHIEF.
(As a Foal.)



HAWDDGAR MOUNTAIN ECHO.
(Foaled 1912.)



HAWDDGAR PICCADILLY 3398. (Foaled 1911.) First at the Royal, 1912.



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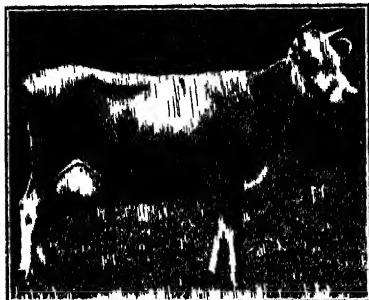
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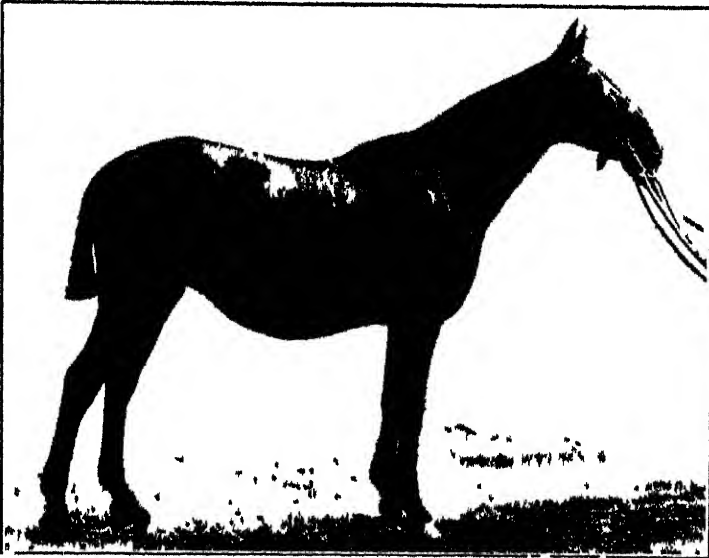
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OF APPOINTMENT.

Royal Agricultural Society of England.

THE ERADICATION OF TUBERCULOSIS.

The Council of the Society have recently had under consideration the subject of tuberculosis in cattle, especially with reference to the possibility of eradicating the disease from breeding herds, or, where that appears to be impracticable, of rearing the young stock under conditions which prevent their infection.

Although the Council are fully cognizant of the fact that in many herds there are almost insuperable difficulties in the way of complete eradication, they are of opinion that there are many others in which that result could be achieved without great expense or trouble.

It appears to be possible that the belief that tuberculosis is frequently inherited, and that it is, therefore, impossible to reduce the prevalence of the disease in a herd without sacrificing valuable breeding animals, is in a large measure responsible for the fact that so little has yet been done in this country to combat the disease. The Society has recently had carried out a series of experiments which have had results entirely opposed to the view that tuberculosis is frequently inherited, and which show that sound young stock can be reared from tuberculous cows when adequate precautions are taken to preserve the calves from infection after birth.

For the information of Members of the Society the Report on the Experiments is subjoined :—

Report of the Experiments carried out at Woburn for the purpose of demonstrating that by means of isolation it is possible to rear healthy stock from tuberculous parents.

The experiments were carried out in accordance with a resolution passed at a meeting of the Council on the 4th May, 1910, “for the purpose of demonstrating that by means of isolation it is possible to rear healthy stock from tuberculous parents.”

The place selected for the experiments was Charity Farm, near Woburn, which was placed at the disposal of the Committee in the Autumn of 1901. Certain structural alterations necessary to make the existing premises sanitary and suitable for Calf-rearing were immediately put in hand, and on their completion the experiments were immediately begun.

The particular buildings intended for the reception of the young calves were provided with a new impervious concrete floor with surface drainage, the object being to render cleansing and disinfection easy. The floor space was divided up by wooden sparrow partitions into pens of a size suitable

for calves. Two buildings of this description were made available, these being separated by a smaller shed which contained a large open copper for heating the milk and providing the boiling water for washing and scalding the milk vessels and feeding pails.

Arrangements were made with several owners to allow their cows to be submitted to the tuberculin test, and to place at the disposal of the Committee any selected as being suitable until after they had calved. As soon as possible after the test had been carried out the selected reacting cows were sent to the Society's Experimental farm at Woburn and kept there until they had calved and cleansed, after which they were returned to their owners.

In arranging a plan for the experiments the Committee had to take account of the circumstances which might prevent the success of any attempt to rear to maturity and free from tuberculosis the progeny of a tuberculous parent. And it may here be said that although the plural word was used in the resolution passed by the Council it was understood by the Committee that what they were desired to demonstrate was the possibility of rearing in a state of health calves of which one parent viz., the female, was tuberculous. A more prolonged and expensive set of experiments would have been required to prove this possibility with regard to the calves of which both parents were tuberculous, although there is no reason to suppose that the difficulty in breeding and rearing healthy calves from tuberculous cows would be increased in any degree by the fact of the male parents being also diseased.

As it is generally admitted that tuberculosis is a purely contagious disease, resulting from the multiplication of the tubercle bacillus in the bodies of infected animals, what the Committee had really to do was to demonstrate (1) that the bacillus is as a rule not present at the time of birth in the calves of tuberculous cows, and (2) that calves born healthy may be reared in circumstances that prevent infection with tubercle bacilli. It was from the outset clear to the Committee that the experiment might fail to demonstrate either of these things. In the first place it admits of no denial that tuberculous cows sometimes produce tuberculous calves, but it is known that this does not occur as a rule, and times among cows that appear to be healthy. That is to say, the risk of the experiment is small, although some of the calves being born tuberculous was very slight, providing the cows selected for the experiment were not suffering from what may be called advanced tuberculosis.

The only real difficulty in the demonstration therefore arose from the risk that the calves might become infected after birth, and the problem was to prevent the access of tubercle bacilli to them. In nature these bacilli come from one source, viz., animals or human beings affected with tuberculosis, and as regards the bacilli which cause the disease in cattle, the human source may for all practical purposes be left out of account. The arrangements had therefore to aim at making it impossible for tubercle bacilli to reach the calves either directly or indirectly from tuberculous animals, and especially from animals of their own species. The most immediate risk obviously was that the calf might become infected from its mother. To guard against this, each cow at the time of calving was tied up, and as soon as the calf was born it was carried into a building that had not previously been used for cattle, where it was rubbed dry. As soon as possible thereafter it was removed by cart to the calf rearing premises, a mile distant. Further, the man in charge of the calves was kept entirely for this work, and had no contact with other cattle.

As the calf houses here had been to a large extent reconstructed, provided with a new floor, cleaned, disinfected, and whitewashed, it was permissible to assume that there was little or no risk that the calves could become infected by bacilli remaining over from the previous tenancy. The milk on which the calves were fed was obtained from a farm in the neighbourhood, and before use it was raised to a temperature of not less than 160° Fah. by immersing the vessels containing it in water which was kept boiling in the copper. Assurance was thus obtained that any bacilli which might have been brought from the cows at the neighbouring farm had been killed.

When milk diet was stopped the calves were kept on two fields which were reserved exclusively for their use, and they were never allowed to come into contact with other animals with the exception of the bull which was put with them to serve the heifers in September, 1912. This bull had passed the tuberculin test before he was brought to the place, and, after arrival, he was again tested, with the same result.

An independent Board of Experts was appointed to conduct post-mortem. Examinations of the Animals as they were slaughtered, consisting of Dr. A. Stanley Griffith, The Field Laboratories, Milton, Cambridge; Mr. James B. Manuel, M.R.C.V.S., 117, Tottenhall Street, Wolverhampton; Mr. W. G. Barnes, M.R.C.V.S., late Superintendent of the Metropolitan Cattle Market; and Mr. James R. Hayhurst, M.R.C.V.S., the present Superintendent of the Metropolitan Cattle Market.

Inasmuch as no evidence of tuberculosis was found in any of the animals after they were slaughtered, these experiments may be held to have demonstrated "**that by means of isolation it is possible to rear healthy stock from tuberculous parents.**"

It is true that this involves the assumption that a distinct reaction to tuberculin may in practice be accepted as proof that the reacting animals are tuberculous, for the cows which gave birth to the calves were not submitted to post-mortem examination. To furnish absolute proof that the cows were tuberculous was not considered necessary, and to have done so would have added greatly to the cost of the demonstration. It may be pointed out, however, that if there are any breeders who consider the tuberculin test unreliable the experiment, nevertheless, have considerable value for them, since they prove that by means of isolation it is possible to rear non-reacting calves from reacting cows. Although the experiments assumed, and were not intended to prove, the reliability of the tuberculin test when properly carried out, they do add further testimony to its value, for on the assumption that the test is quite trustworthy there does not appear to be any reasonable explanation of the fact that with one exception (Calf No. XI.) none of the calves reacted, while among 127 apparently healthy cows, 35 (or 23 per cent.) reacted distinctly. The case of calf No. XI. illustrates one of the sources of error in testing animals with tuberculin, viz., an accidental rise of temperature occurring during the period of the test, meaning by "accidental" that the rise was caused by something other than the tuberculin. The facts set forth in this animal's record indicate that it suffered from some temporary illness of which the cause was not determined, and that this illness was responsible for the rise of temperature after the injection of tuberculin on the 18th October, 1912.

In conclusion, it appears to be necessary to refer to the fact that so many of the experimental calves were attacked with white scour within a few days after they were brought to Charity Farm, and to say that while this was to be much regretted there does not appear to be any ground for supposing that the occurrence had any connection with the fact that the calves were the progeny of tuberculous cows, or that they were hand-reared from birth.

The Committee desire to acknowledge the great assistance given by Lord Rothschild and the late Sir Richard Cooper, Bart., in providing the calves for the demonstration. Their thanks are also due to Sir J. Bowen Bowen-Jones, Bart., the Chairman of the Chemical and Woburn Committee, and to Dr. Voelcker, for their kind co-operation, to Mr. W. H. Hogg, the late Farm Manager, and to Mr. F. C. Atkinson, the present Farm Manager, for their efficient supervision of the animals, and especially to Sir John McFadyean, under whose direction the demonstration has been carried out.

December 9th, 1913.

NORTHBROOK, *Chairman.*

A copy of the article in Vol. 71 of the Journal, by Sir John McFadyean, in which the measures by which a herd may be freed from tuberculosis are fully described, will be sent upon application free to any member of the Society on payment of the postage.

W. S. McFadyean

16, BEDFORD SQUARE,
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Secretary.

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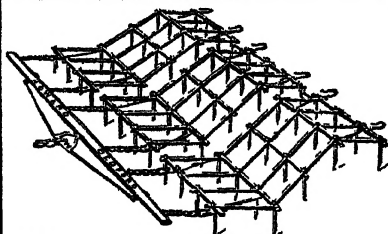
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Skim Coulter, 5s 6d extra.			
Steel instead of iron breast, 8s. extra.			



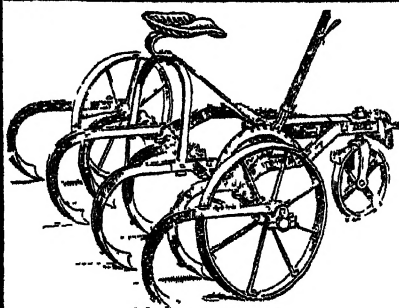
DIGGING PLOUGHS.

D D X, with two wheels, and skim coulter, weight 206 lbs.	4	10	0
L B X, with two wheels, and skim coulter, weight 236 lbs.	5	5	0
L B F N, with two wheels, and skim coulter, weight 236 lbs.	5	5	0
L B T, with steel chisel bar share, weight 236 lbs.	5	5	0



ORIGINAL HARROWS.

No. 11, for one or two horses, 8½ ft wide, weight 145 lbs.	3	7	6
No. 12, for two horses, 9½ ft wide, weight 190 lbs.	3	15	0
No. 11, for two or three horses, 10 ft wide, weight 215 lbs.	4	5	0



FAMOUS CULTIVATORS.

No 5, with seven times working width 14 ft, weight 330 lbs.	8	0	0
Seed-box attached for broadcast sowing, Four Gunners.			
No 7, with nine times working width 64 ft., weight 366 lbs.	9	5	0
Seed-box attached for broadcast sowing, Five Gunners.			

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